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THE

VOYAGE OF H.M.S. CHALLENGER

ZOOLOGY—VOL. XV.

REPORT

ON THE

SCIENTIFIC RESULTS

OF THE

AGE OF H.M.S. CHALLENGER

DURING THE YEARS 1873-76

UNDER THE COMMAND OF

CAPTAIN GEORGE S. NARES, R.N., F.R.S.

AND THE LATE

CAPTAIN FRANK TOURLE THOMSON, R.N.

PREPARED UNDER THE SUPERINTENDENCE OF

THE LATE

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DIRECTOR OF THE CIVILIAN SCIENTIFIC STAFF ON BOARD

AND NOW OF

JOHN MURRAY

ONE OF THE NATURALISTS OF THE EXPEDITION

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MARSENI ollected by H.M.S. CHALLENGER during the years 1873–1876.

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I.—Report on the

By Dr Rudolp

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II.—Report on the Scapi

By the Rev. Robert

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III.—Report on the Polyplacophora c

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By Alfred C. Haddon, M.A., M.R.

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TORIAL NOTE.

THIS volume conta
Series of Reports on t XLI. XLII. and XLIII. of the Zoological

On the return of th c Results of the Expedition.
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separating out the whole for examination and description. After
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to the larger groups of the it necessary to limit his investigations
of Lamellibranchiata was sub poda and Scaphopoda. The collection
and his Report has been alre ly handed over to Mr E. A. Smith
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The results of Mr Watson's v ed am g other Naturalists.
which makes up the bulk of the p are n in the extensive Re
on the Polyplacophora by Professor t vol ; the other reports b
of Science, Dublin, on the Marseniadd don .A., of the Royal Co
to Mr Watson's Report by the Marquis Bergh, and an App
Cæcidæ.

CHALLENGER EXPEDITION OFFICE, 32 QUEEN STREET,
EDINBURGH, *August* 9, 1886.

ERRATA TO PART

Page 12, line 12 from below, *after* "*Dentalium octogonu*
„ 87, after line 11, *read* "Station 208. January 17 *ead* "Lam."
fathoms. Blue mud." 37′ N., long. 123° 31′ E. 18
„ 117, line 6 from above, *for* "*Schismope*" *read* "*S*
„ 120, after line 6 from above, *add* "2. *Homalog*
p. 677.)" , Jeffr. (See Appendix, No. I*A*,
„ 123, line 4 from above, *for* "Linne" *read* "La
„ 125, „ 3 from below, *for* "W." *read* "E."
„ 158, „ 10 from above, *for* "E." *read* "W."
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„ 245, last line, *for* "*sanguisuga*, Lam.," *read*
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and 20 fathoms. Sand lanipa, Basilan Strait, Philippines. 10, 14,
„ 304, line 4 from above, *for* "W." *read* "
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„ 357, line 10 from below, *for* ion 24, 450 and 500 fathoms. Volcanic mud."
long. 6 W. O *ad* "Station 23. March 15, 1873. Lat. 18° 24′ N.,
ooze." rero Island, West Indies. 450 fathoms. Pteropod
„ 381, „ 8 from below, *fo* ." *read*
„ 396, „ 4 „ *fo* outh
„ 405, „ 5 „ *fo* *ead* "South-west."
„ 614, „ 5 E."
„ 617, *lariformis*" *read* "*Rissoina ephamilla.*"
is" *read* "*ephamilla.*"
75," &c.

on some errors in the numbers of the pages have been overlooked, but none hey can be at once corrected by a reference to the index.

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THE

VOYAGE OF H.M.S. CHALLENGER.

ZOOLOGY.

REPORT on the MARSENIADÆ collected by H.M.S. CHALLENGER during the Years 1873–76. By Dr RUDOLPH BERGH, Physician to the General Hospital of Copenhagen.

INTRODUCTION.

THE family of the Marseniadæ has slowly gathered round the *Helix perspicua*, first defined by Linné in the tenth edition of his Systema Naturæ,[1] and the *Bulla latens* of O. Fr. Müller.[2] These forms, without an externally visible shell, were left for long unnoticed, until M. Sars[3] recalled attention to *Bulla latens*, while Cuvier[4] had meantime investigated a form nearly related to that mentioned by Ström and by Linné, and had described it under the name of *Sigaret*, which he borrowed from Adanson. A form at least congeneric (*Lamellaria tentaculata*) was described by the English naturalist Montagu,[5] and referred by him to his genus *Lamellaria*. The resemblance, however, between the title bestowed by Montagu and the generic designation of a group of Algæ (*Laminaria*, Lamouroux), as also the fact that the name *Lamellaria* cannot be fitly applied to the first and typical section of Montagu's genus, led Leach to advocate the disuse of the term. About 1819, in the British Museum, and a year later in his Synopsis,[6] he applied

[1] Syst. Nat., 1758, ed. x. t. i. p. 775, No. 620.

[2] Zool. Dan. prodr., 1776, p. 242, No. 2923.

[3] M. Sars, Beskriv. og Jagttag. over nogle mærkelige eller nye i Havet ved den Bergenske Kyst levende Dyr. Bergen, 1835, p. 67 (*Isis*. 1837, p. 754 (*Sigaretus Strœmii*)).

[4] *Bull. Soc. Philom. Paris*, Oct. 1799, No. 31, p. 32.—Sur l'Haliotide, le Sigaret, &c. (Mém. sur les Moll., 1817, No. 18).

[5] *Trans. Linn. Soc. Lond.*, 1811, vol. xi. p. 179.

[6] The opinion of Herrmannsen (Ind. Malacoz. primordia, t. ii. p. 23) that Müller's *Bulla latens* should be the type of the genus, is really based only on the fact that this species was labelled *Marsenia latens* in the collection of northern Molluscs sent by H. Beck (Museum Christiani viii.) to the assembly of naturalists at Kiel in 1847.

the generic terms *Oscanius*[1] and *Cleanthus* to the first group of Montagu's *Lamellariæ* (*Lamellaria membranacea*), but regarded these only as subgeneric divisions within Cuvier's genus *Pleurobranchus*. For the remaining group, here under discussion, he rejected the misleading designation *Sigaretus*, and formed the title *Marsenia*. As the type[2] of the new genus he proposed *Bulla haliotoidea*, Mtg., Test. Brit. (= *Lamellaria haliotoidea*, Linn. Tr.), but, in order to obviate ambiguity, changed the name to *Marsenia producta*.

Somewhat later (1824) Blainville described a form, from the Isle de France, quite different from, but yet allied to the "Sigarets" of Cuvier, the *Lamellariæ* (p.p.) of Montagu, and the *Marseniæ* of Leach, and established for it the genus *Coriocella*.[3] This, however, turned out to be a Marseniad with a very thin shell, which had fallen off the specimen described by Blainville, as was indeed soon remarked both by Gray[4] and Cuvier.[5] Blainville wished to transfer the name *Sigaretus* to related forms with distinctly developed internal shell, but of the two species which he included in this group, only one bears the characters of the genus, while the other (*Sigaretus haliotoideus*, Martini, vol. i. Taf. 16, Figs. 151–154) belongs to the genus *Stomatia*, Hill (*Cryptostoma*, Blainville). In the article "*Sigaret*" in the 49th volume of the Dict. Sci. Nat., which appeared a few years later, the statement of the generic characters is unaltered, while the number of included species is increased to eight, of which, however, six at least are forms of *Stomatia*. (Here Blainville also seemed much inclined to regard the *Helix perspicua* of Linné as a *Pleurobranchus*.) Some years later (1830) Menke adopted the recently established designation *Cryptostoma*, using it as a synonym for "*Sigaretus*, Lamarck, Sow." (!), and proposed in verbal contrast the name *Cryptothyra*[6] for Blainville's *Coriocellæ;* while Swainson[7] afterwards suggested the term *Chelinotus*.

The group which had gathered round the *Helix perspicua* of Linné had thus received six names: "Sigarets" from Cuvier (1799), *Lamellariæ* from Montagu (1811), *Marseniæ* from Leach (1819), *Coriocellæ* from Blainville, *Cryptothyra* from Menke (1830), and *Chelinoti* from Swainson (1840). This had, so far, its explanation in the imperfection and insufficiency of Cuvier's first investigation and descriptions, which made it almost impossible for other investigators to know what form Cuvier had before him. Nearly all are agreed, at least, in rejecting the originally indefensible and misleading name *Sigaret, Sigaretus*. Montagu's title *Lamellaria*, if used to denote the first of Montagu's species, that is, a form of *Pleurobranchus*, would become identical with the *Oscanius* or *Cleanthus*

[1] *Nec Oscana*, Bosc (a parasitic Crustacean).

[2] Leach, Synopsis of Brit. Moll., 1820 (*teste* Gray, *Ann. and Mag. Nat. Hist.*, Oct. 1847, vol. xx.); see *Oken, Isis*, 1823, Bd. ii. p. 460 (Mus. Paris).—Leach, Moll. Brit. Synopsis (ed. Gray), 1852, p. 26.

[3] Dict. Sci. Nat., 1824, t. xxxii. p. 259.—Man. de Malacol., 1825, p. 466.

[4] Gray, Spicilegia Zoolog., 1828, pt. 1, p. 4; cf. also Gray, Proc. Zool. Soc. Lond., 1847, p. 143.

[5] Cuvier, Règne animal (ed. 2), 1830, vol. iii. p. 90.

[6] Menke, Synopsis (ed. 2), 1830, p. 87.

[7] Swainson, A Treatise on Malacology, 1840, pp. 234, 355.

of Leach. In the earlier works of Gray[1] and of T. Brown,[2] the designation *Lamellaria* ("*Laminaria*")[3] seems to be used in this sense. The name "MARSENIA," on the other hand, which, under the circumstances, would be for many years little known outside of England,[4] was first adopted by Oken,[5] and afterwards applied to the group by Wood,[6] Beck,[7] and others, but more especially and consistently in my monograph.[8] Lovén, who had formerly,[9] like Férussac,[10] Johnston,[11] d'Orbigny,[12] and later Gray,[13] adopted the term *Lamellaria*, Mtg., with the other names appended as synonyms, afterwards[14] employed the title *Coriocella*, Blainville, to designate the typical forms, and restricted the generic name *Lamellaria* to a new and divergent genus. This proceeding had neither justification nor resulting benefit, quite apart from the fact that Blainville had originally founded the genus on a faulty characterisation, which, as Philippi[15] pointed out, was only applicable in Cuvier's corrected version. The *Coriocellæ* of Blainville are moreover not typical, and the name is therefore hardly applicable to the perfectly typical forms. Menke's term *Cryptothyra* is to be rejected as superfluous, while the name *Chelinotus*, given by Swainson to a form certainly closely allied to the *Coriocella nigra* of Blainville, must, as a generic or subgeneric designation, displace the misused and misleading term *Coriocella*.

Various faunists (Delle Chiaje, Gould, Michaud, Audouin, &c.) gradually increased the number of "species," but with the exception of Lovén (*loc. cit.*) did almost nothing to further the general or anatomical knowledge of the group. The first important contribution towards this end was my monograph (1853), which treated of the genera *Marsenia*, *Chelyonotus*, *Marsenina*, and *Onchidiopsis*. Owing especially to the scanty material, very much still remained, however, to be done to elucidate anatomical structure. My monograph

[1] London Med. Repos., 1821, p. 232: A natural arrangement of Mollusca according to their internal structure.

[2] Illustrations of the Conchology of Great Britain and Ireland, 1827.

[3] This term was revived by Clark (On the Conovulidæ, &c., *Ann. and Mag. Nat. Hist.*, 1850, ser. 2, vol. vi. p. 451).

[4] The term must have been known to Blainville, who investigated several new molluscs in the British Museum, and instituted there his genus *Cryptostoma*.

[5] *Isis*, 1823, vol. ii. p. 460.

[6] *Ann. and Mag. Nat. Hist.*, 1842, vol. ix. p. 455, sp. 527.

[7] *Amtl. Ber. 24te Versamml. d. Naturf. u. A. in Kiel*, 1846, p. 116.

[8] R. Bergh, Bidrag til en Monogr. af Marseniaderne, 1853, *Kgl. Danske Vidensk. Selsk. Skr.* 5 R. Naturv. og mathem. Afdel. iii. pp. 243–359, tab. i.–v.

[9] Lovén, Index Moll. Scandin. occid. habit., 1846, p. 15.

[10] Tableaux systémat. des Anim. Moll., 1822, p. xvi.

[11] *Mag. Nat. Hist.*, 1836, vol. ix. p. 229.

[12] Voy. dans l'Amér. mérid., p. 403.

[13] Figures of Moll. Animals, 1850, vol. iv. p. 75.—Guide, 1857, vol. i. pp. 27 and 28 (*Ermea*).

[14] *Öfversigt k. Vetensk. Akad. Handl.*, 1847, p. 192.

[15] Philippi, Berichtigung von Berichtigungen, Sigaretus und Lamellaria. *Archiv f. Naturgesch.*, 1841, Jahrg. vii., Bd. i. p. 343.—Enum. Moll. Sic., 1844, t. ii. p. 142.

was soon followed up by my research on *Marsenina prodita*.[1] Subsequently H. v. Jhering[2] contributed an investigation of the nervous system of *Marsenina perspicua*, and G. O. Sars[3] finally published a research on the oral parts of *Marsenia latens*, *Marsenina prodita*, and *Onchidiopsis glacialis*. By several naturalists, especially Dall and Verrill, some new, but more or less doubtful, species have been added.

Even the Challenger expedition has made but scanty contributions to the group; it has however brought to light a generic form of great interest.

Family MARSENIADÆ (Leach), Bergh.

Marsenia, Leach, 1820, Moll. Brit. Synopsis (ed. Gray), 1852, p. 26.
Lamellariacea, Lovén, Öfvers. Vet. Akad. Handl., 1847, p. 192.
Lamellaridæ, Gray, Figures of Moll. Anim., 1850, vol. iv. p. 75.
Lamellariadæ, Gray, Guide, 1857, vol. i. pp. 27, 28.
Velutinidæ, Gray, p.p. (*loc. cit.*), 1857, p. 46.
Marseniadæ, Bergh, Monogr. (*loc. cit.*), pp. 243–359, tab. i.–v.
Marseniadæ, Troschel, Das Gebiss der Schnecken, vol. i., 1856–1863, pp. 185–188, pl. xvi. figs. 1–5.
Velutinidæ, Troschel, p.p. (*loc. cit.*), pp. 167–169, pl. xv. figs. 17–19.

Mollusca gastræopoda prosobranchiata (streptoneura, azygobranchiata).

Pallium ampliatum, incrassatum, supra læve vel nodulosum vel grosse tuberculatum; vel continuum, testam recondens, vel culmine fissum, testam pro parte detegens. Limbus pallii vel amplus et planus, vel crassior et rotundatus, ultra margines podarii productus; pro siphone antice in pagina inferiore limbi semicanali exaratus cum plica marginali vel emarginatura; in medio lateris dextri limbi interdum semicanalis et plica similis.

Testa semper adest, ut plurimum obtecta, interdum partim denudata;—tum spiraliter convoluta, paucigyra, calcarea, tenuis, semper absque margarita; *apertura ampla*, margine columellari simplici arcuato, antice vix cum flexuræ vel emarginaturæ vestigio;—tum cornina, scutiformis, absque spira.

Cavitas branchialis duabus branchiis instructa; altera spuria, antica, minore, foliolis homomallis; altera vera, postica, majore, foliolis secundis.

Caput depressum, antice truncatum. Tentacula quasi ex angulis capitis orta, teretia, basi depressa, vel subcylindrica vel subconica; oculi in tentaculorum basi externa sessiles, quasi ophthalmophoriis brevibus inserti.

Rostrum retractile, sat longum, validum, per rimam oralem inferiorem transversalem (os externum) exsertile; os internum utrinque lamina mandibulari cornina validiori

[1] R. Bergh, Bidrag til en anat. Unders. af Marsenina prodita (Lovén), *Vid. Meddel. nat. Foren. Kjøbenhavn*, 1857, pp. 110–122, tab. i.

[2] H. v. Jhering, Vergl. Anat. des Nervensyst. u. Phylogenie d. Mollusken, 1877, pp. 115–117.

[3] G. O. Sars, Moll. reg. arct. Norv. 1878, pp. 150–153.

armatum. *Radula* linearis, valida, postice in vaginam libere prominentem, longam, sæpius quasi spiraliter involutam continuata. Armatura radulæ mire diversa. Dens medianus semper solitarius, margine basali posteriori bifido vel truncato; apice recurvato cum acie unicuspide et utrinque denticulata. Dentes pleurales numero varii; semper lateralis internus validus, interdum præterea uncini duo externi.

Podarium oblongum, antice truncatum, subemarginatum, margine antico sulco exaratum; postice nonnihil acuminatum, apice subrotundatum (operculo lobuloque operculigero nullis).

Animalia pro parte dioica, pro parte monoica. Penis validissimus, pone tentaculum dextrum exsertus, sat compressus; interdum falcatus, apice incurvatus; interdum involutus; sub inertia intra marginem cavitatis branchialis recondendus. Apertura genitalis feminina, *vulva*, verruca perforata intra angulum dextrum fissuræ branchialis sita.

Animalia marina, ut plurimum solitaria, segnia, ova in cavitates Ascidiis compositis vel Spongiis excavatas deponentia. Embryones testa externa provisoria carinis compluribus instructa.

The Marseniadæ have a somewhat round or oval contour, and are generally almost hemispherical. The dorsal surface (*pallium*) is either smooth, or covered with a variable number of large, bluntly conical or more spherical tubercles. The shell is either altogether enveloped in the mantle, or is partially exposed at a round or oval opening on the middle of the back (*Marsenina*). It covers the whole of the respiratory apparatus (*Onchidiopsis*), and usually the whole of the upper visceral mass; at the edge of the wide opening it is intimately united to a rather thick flat band, the shell-fillet. The shell may have a shield shape, without a trace of spiral-turning, and is then of a horny nature (*Onchidiopsis*); or it may be almost horny and with a hint of a spiral (*Marseniella*); usually, however, it is wound in a small spiral with few turns, of which the last is very wide, and in this case the shell is always calcareous, but very delicate and brittle. On the inner side of the last turn of the shell there are usually two (frequently indistinct) muscle-facettes, one somewhat anteriorly to the left, the other posteriorly to the right. The *border of the mantle* is very well developed, projecting all round, and usually completely covering head and foot, with the exception of the tip of the tail. It is usually flattened and surrounds the upper portion of the body as a border of varying breadth; occasionally it is thicker, rounded at the margin, and somewhat flattened on the lower side (*Marseniopsis, Onchidiopsis*). There is no proper, markedly protruding siphonal structure; but this is replaced by a semi-canal on the under side of the mantle, which twists the border upwards in a protruding fold, or ends between two finger-like prolongations (*Chelyonotus*). This semi-canal ends at the left corner of the anterior end of the gill-cavity. Besides this *inhalent* canal there is in some genera (*Marsenina, Onchidiopsis*), on the right side, a perfectly similar *exhalent* canal, ending at the right corner of the branchial cavity. The *branchial cavity* is wide and spacious, but depressed. On its roof are fixed the two so-called branchiæ, the anterior

"false gill"—pennate, but attached to the wall almost throughout its entire length and breadth,—the posterior "true gill" with leaflets along one side. These thin leaflets, which form the *functional gill*, lie closely together, arranged along a curved transverse line, and slanting down from the base of attachment into the branchial cavity. The leaflets vary in breadth; in the more typical genera (*Marsenia, Marseniella, Marseniopsis*) they bear laterally either transverse ridges or small secondary leaflets. Behind the gill, on the roof of the cavity, lies a *kidney* of some considerable length (*Marseniella*), which may, however, be smaller, and situated on the left. To the left, at the end of the kidney, the *pericardium* is seen. Behind the gill there is usually a space covered by the whitish "secreted substance" of the kidney, or of the "foliated gland," or of both. Lastly, behind gill and kidney, over the whole breadth of the branchial cavity, there lies the usually broad *foliated gland*. On the roof of the cavity, in a more median and posterior position, or else to the left, lies the *external, branchial aperture of the kidney and foliated gland*. At the right-hand corner of the branchial space is situated the more or less protruding *anal papilla;* behind this in the female dioecious Marseniadæ lies the *vulva*, and in the monoecious forms (*Marsenina, Onchidiopsis*) the female generative aperture.

The lower part of the body, below the branchial cavity, is smaller than the superior portion, and includes the central nervous system, the whole anterior portion of the digestive organs, and a large part of the *vas deferens*. The *head* is somewhat large and flattened, truncated in front, sometimes slightly indented, and drawn out on each side into an anteriorly-directed tentacle. The *tentacles*, springing from the side of the head, are somewhat flattened at their base, but are otherwise conical or cylindrical. The *eyes* are nearly sessile at the base of the tentacles, or seated on short ophthalmophores. The *external mouth-opening* is situated on the under surface of the head, usually at a little distance from the anterior end, and forms a transverse slit; sometimes (*Marsenina, Onchidiopsis*) it lies further forward, and is then a more roundish opening. Through the external mouth the rostrum is protruded. The *foot* is powerful,[1] and with the exception of the end of the tail, is wholly overlapped by the border of the mantle, on which, however, the animal does not seem to rest when creeping.[2] The foot is somewhat long and narrowed posteriorly, ending in a rounded point. The anterior border exhibits a deep groove, in which the *pore of the foot-gland* opens medially. The edges of the foot project but slightly, and the tail is not short. The border of the foot is sometimes peculiarly thickened (*Onchidiopsis*). The *penis* is always strongly developed, and though not retractile, can be hidden, during quiescence, within the limits of the branchial cavity. The whole organ is more or less compressed, usually plano-convex, and with the edge bent or somewhat

[1] Quite erroneous is the statement made by Adams, L. Reeve, and especially by Keferstein (Bronn, Kl. u. Ordn. d. Thierreichs, Bd. iii., Malacozoa, 1864, p. 1057), according to which the foot "almost entirely conceals the shell," and the enveloping mantle is regarded as a development of the *Lobus operculigerus*.

[2] This seems, however, to be the case in *Pyrula;* cf. Örsted, *Vid. Meddel. nat. Foren. i Kjøbenhavn*, 1850, p. 9.

rolled up (*Onchidiopsis*). It is sometimes broadened (*Marsenia*), sometimes narrowed at the apex (*Onchidiopsis*). The seminal duct runs along the whole length of the penis, and its end can usually be stretched out in a finger-like protrusion.

The *central nervous system* exhibits a structure in general agreement with that of the other azygobranch streptoneural Gasteropods,[1] and essentially differs from that of some of them (*Cassidaria*), only in the shortening of the proximal ends of the pleural (visceral) commissure. Each half of the *superior ganglionic mass* exhibits three ganglia lying in close association; on the left—a cerebral, a pleural, and (usually on the upper side of them) a supra-intestinal (siphonal ganglion of Jhering) lying on the latter; on the right, side by side—a cerebral and a pleural, with a subintestinal (abdominal of Jhering) situated behind and beneath them. The cerebral ganglia are connected by a rather short commissure, and give origin to the usual nerves and to the cerebro-pleural and cerebro-pedal connectives. Similarly, from the pleural ganglia there originate the usual nerves and the pleuro-pedal connective; the right ganglion is united superiorly and to the left with the supra-intestinal, posteriorly and inferiorly with the sub-intestinal, and through the latter with the left pleural ganglion, which is again connected with the supra-intestinal. It is probable that the sub-intestinal ganglion is further connected with the supra-intestinal by a special commissure included in the pleural (visceral). The supra-intestinal, situated on the left, sends nerves to the gill, to the olfactory organ, and to the left half of the mantle. The subintestinal, situated on the right, supplies principally the digestive system and the right half of the mantle. The relations of the buccal ganglia are as usual.—The *inferior or pedal ganglionic mass*, lying in close connection with the foot, is linked to the superior by the cerebral and pleural connectives; the connectives of the right side are, however, usually (*Chelyonotus, Marsenia, Marseniella, Marseniopsis*) much shortened. From the anterior portion of the pedal ganglia a small round secondary ganglion is always separated off, and from this the anterior part of the foot is innervated.

The *eyes* are, as we have mentioned, situated on small knobs (*ophthalmophores*) at the base of the tentacles. The *otocysts* are inclosed in flat, milk-white sheaths, formed of connective substance, and are situated on the side of the pedal ganglia, or somewhat more externally. The *Nervus acusticus* ascends through the cerebro-pedal connective to the cerebral ganglion. The otolith is large and spherical.

The bipinnate *olfactory organ* lies in a special groove in front of the gill, and is attached to the shell-ridge by a fine fold, through which the *Nervus olfactorius* runs from the supra-intestinal ganglion. The organ itself consists of a rhachis enclosing the nerve, and of rather large leaflets springing from the rhachis. The *skin* is well supplied with glands, especially in the mantle. On the anterior border of the foot, there is a small gland, the *foot-gland*, which opens by the previously mentioned pore.

[1] Cf. Spengel, Die Geruchsorgane u. das Nervensystem d. Mollusken, *Zeitschr. f. wiss. Zool.*, 1881, vol. xxxv. p. 373.

The Marseniadæ possess a *protrusible* rostrum. The *external mouth*, situated either at a short distance from the anterior border and then transverse, or further forward and then round, leads into the rostral cavity—the retracted rostrum. When the retraction is complete, the *internal mouth*, the entrance to the bulbus pharyngeus, is seen on the floor of the cavity as a narrow aperture. When the retraction is only half complete, the rostrum appears within the rostral cavity as a short truncated body, with the interior mouth at its apex and sometimes visible at the external opening. When protrusion is complete, the rostrum is seen as a cylindrico-conical prolongation of some length with the internal mouth at its apex, and with the bulbus pharyngeus therefore within. The internal mouth is surrounded by a flat, narrow lip, and is lined internally on each side by a rather flat, horny *mandibular plate*. These are either prominent, strongly developed, almost homogeneous structures, with the anterior border specially thickened (*Chelyonotus, Marsenia, Marseniella*); or they are somewhat narrow plates of a slighter nature, composed of rods arranged in indistinctly separable rows (*Marseniopsis*); or, further, they may resemble the latter in some respects, but with a stronger development, and consist of regular, obliquely transverse rows of component elements with a denticulated anterior edge (*Marsenina*), and occasionally with a specially strong compound prong in addition (*Onchidiopsis*). The *bulbus pharyngeus* is well developed, especially in the *Chelyonoti;* the anterior portion, with the mandibular plates, is bent slightly downwards; at each side of the posterior end there is a peculiar "cartilaginous patch," formed from the posterior extremity of the tongue-cartilage, and like it serving for the insertion of muscles. From the middle of the posterior end extends the somewhat long radula sheath, bent usually first down and then up, and often with a slight spiral twisting. The short broad *tongue*[1] bears very varied armature in the different members of the group. Usually a strong lateral plate lies on each side of the middle one; in some genera (*Marseniopsis, Marsenina, Onchidiopsis*) two external hooks are also present. The number of rows of teeth in the *Marseniadæ* is, as in the related families, by no means small, amounting in all, including both those on the tongue and those in the sheath, to between 42 and 92. They are most numerous in the *Onchidiopsides* (as many as 92), and *Marseniopsides* (as many as 72). The median plates have the posterior margin truncated, or deeply cleft (*Marsenia, Chelyonotus, Marseniella*); the anterior edge is bent upwards, and exhibits small denticles at each side of the strong point. The strong lateral tooth-plates usually have the broad dorsal portion deeply cleft, or only superficially grooved (*Marsenina, Onchidiopsis*). When the tongue is shortened, the point of the body of each of these teeth is pushed into the groove of the plate behind. The strong hook of these plates is toothed on both edges, more finely on the superior (posterior). The two external hook-like plates are but slightly developed, the hooks are not denticulated, or exhibit only a few fine teeth.

There are apparently no proper salivary glands.

[1] Delle Chiaje seems to have observed the lingual cavity in his *Helix neritoidea*.

The *œsophagus* is relatively short and wide, and is frequently somewhat enlarged below into a sort of crop. It descends to the right, or to the left, or sometimes directly backwards. In some genera (*Chelyonotus, Marsenia*), the canal is connected before the cardia with a saccular *proventriculus*, which lies along the right of the anterior side of the foliated stomach, and further forward. The œsophagus opens into the lower anterior portion of the altogether peculiar *foliated stomach*. This organ has a cap-like form, due to its more or less hollowed-out anterior portion, and is arched posteriorly. The small and flattened cavity communicates anteriorly with the œsophagus, and is continued posteriorly to the true stomach; the wall is very thick, and formed of a number (usually 10 to 20) of glandular dissepiments, which lie at right angles to the cavity. The whole stomach is more or less completely surrounded by a thick *glandular layer*, which is especially well developed inferiorly, frequently almost enveloping the pedal ganglia, and sometimes extending further forwards. This glandular mass may perhaps represent the salivary glands, but it does not communicate either with the rostral cavity or the bulbus pharyngeus. From the posterior side of the foliated stomach a short gut goes obliquely upwards through the thin but firm partition between the inferior and superior body-cavities, and through the liver to open into the stomach proper on its anterior and lower wall. The *true stomach* is of a roundish shape, has a considerable width, and exhibits, besides the cardiac opening, several wide bile-duct apertures. It is continued on without marked boundary into the intestine, and is seen (as also the posterior portion of the latter) shining through on the posterior surface of the upper visceral mass. Elsewhere it is enveloped by the liver. The *intestine* appears at first as the narrowed continuation of the stomach; it then extends to the left, and, just in front of the pericardium, bends with a knee-like curve into the anterior stretch, which runs along on the right of the front side of the liver. Finally, twisting forwards, it ends in the anal papilla, at the right corner of the branchial cavity.

The contents of the digestive cavity were for the most part unrecognisable animal remnants (probably mostly of Alcyonidæ and Ascidians). In the intestine these appeared usually as oval or short sausage-shaped, white or darkish, firm masses of excrement.

The *liver*[1] exhibits the ordinary structure. It is penetrated by a network of bile-ducts, which are wide terminally, and open by several round apertures into the true stomach.

The pericardium, the heart, and the vascular system do not seem to differ essentially from those of other Prosobranchiates.

The *kidney* is usually comparatively small, and situated on the left; it occasionally attains a larger size, becoming broadened out posteriorly (*Onchidiopsis*); or it may lie transversely behind the branchia (*Marsenina*). The structure agrees with that in other *Prosobranchiata*. It communicates by a fine pore with the pericardium, and opens by a slit on the left into the branchial cavity.

[1] Cf. Barfurth, Ueber den Bau u. die Thätigkeit der Gasteropoden-Leber, *Archiv f. Mikr. Anat.*, 1883, Bd. xxii. pp. 473–524, taf. xx.

Behind the gill and the kidney, on the anterior edge of the liver, and partly resting on the intestine, lies the *foliated gland* ("Feuillets muqueux," Cuv.; "Schleimdrüse" of some authors). It exhibits the usual structure, and seems to open into the branchial cavity by the same aperture as the kidney.

Most of the Marseniadæ are, like the other Prosobranchiata, *diœcious*, unisexual. The reproductive gland, *testis* or *ovary*, forms the termination and the posterior portion of the last twist of the superior visceral mass. They are both composed of long attenuated follicles.

The *vas deferens* forms a large coiled knot, with which the windings of a tubular, appendicular, *prostate* organ are associated. It is continued from the superior visceral mass to the right wall of the inferior body-cavity, within which it extends with many twistings to the penis, through which it is further prolonged to an opening at the tip. Less frequently (*Marsenia, Marseniella*) the *vas deferens* passes, at the root of the penis, from the body-wall into the body-cavity, where it becomes more strongly developed, and extends with multitudinous coils over the *foliated stomach* and the bulbus pharyngeus, finally entering the penis. The terminal portion of the *vas deferens* is, in most of the genera, free within its cavity, and can be protruded, like a finger, from the apical aperture, or on the other hand altogether retracted. The *penis* is, as we have mentioned, slightly different in the various genera.—The *oviduct* passes from the ovary into a large *mucus and albumen gland*, lying on the inside of the fasciculus of the right shell-muscle. Thence it is continued forwards as a comparatively short, but yet strongly developed *vagina*, which opens below the anal papilla. Just above the vulva, a special, short, strong-walled diverticulum is formed by the vagina. A number of minute *seminal receptacles* open into the posterior end of the mucus and albumen gland.

Among the Marseniadæ, however, several *monœcious*, bisexual genera occur (*Marsenina, Onchidiopsis*), a sexual relation not occurring elsewhere among Prosobranchiates, except in the but little known genus *Valvata*.[1] The *hermaphrodite gland* exhibits the usual structure; the *hermaphrodite ducts* are associated with a very peculiar *accessory hermaphrodite gland;* the common duct passing from the latter divides in the usual fashion. The male duct—the *vas deferens*—is associated with a tubular *prostate* rolled up into an irregular knot, and usually enveloping the greater part of the *vas deferens*. The duct is continued onwards, in the usual way, within the body-wall to the *penis*. The female portion forms a vaginal duct associated with an immense *seminal receptacle*, with a thick-walled *vestibular sack*, and with the large two-chambered *mucus and albumen gland*. The *vagina* opens by a small slit-like *vulva* below and behind the anal papilla. The above account is based on an investigation of the monœcious apparatus of the *Onchidiopsides*.

But little is yet known of the *ontogeny* of this group. In regard to the *Marseniæ* proper (*Marsenia perspicua*) the reports of Peach, Hennedy, and Giard enable us to

[1] Moquin Tandon, Observ. sur l'appareil génital des Valvées (*Mém. de l'Acad. sc. Inscript. et Belles-Lettr. de Toulouse*, sér. 4, 1852, vol. xi. p. 63); *Journ. de conch.*, 1852, vol. iii. pp. 244–248, pl. ix. figs. 3, 4.

state that they eat out round holes in composite Ascidians (*Leptoclinum maculosum*, *Polyclinum succineum*), and there deposit their ova. They shut the cavities with special lids which exhibit concentric rings, said to be produced by the rotatory movements of the animals. The *Onchidiopsides* seem to form cavities with somewhat similar lids in a Halisarcid (and probably also elsewhere). The brood-cavities contain, as Giard (*Marsenia*) and Bergh (*Onchidiopsis*) have observed, a number of nutritive ova which supply the developing embryos with food. Giard[1] has traced the general outline of the developmental history; according to him, two successive provisional shells are formed, the first nautiloid, the second simpler, exhibiting a greater resemblance to that of a *Carinaria*. Long before, however, Krohn[2] had noted that the larval shell of these animals does not develop into that of the adult, but that within the nautiloid shell, which is provided with several keels, a new shell is formed with a much greater resemblance to that of the adult *Marsenia*. The animal withdraws from the primary shell (which then disappears), and is finally covered only by the rudiment of the new persistent shell. Similar observations have been made by Macdonald[3] on South Sea forms, as the result of which it would seem that the *Jasonillæ* of Macdonald, the *Browniæ* of d'Orbigny, and the *Calcarellæ* of Souleyet are probably simply larval forms of *Marseniæ* or other Marseniadæ. I have also observed a larva with a somewhat similar, but much ribbed, primary shell, and this is probably to be referred to an Arctic *Onchidiopsis*.[4]

The Marseniadæ are found in all seas; particularly developed types mostly occur in tropical seas (*Chelyonotus*) and the Arctic Ocean (*Onchidiopsis*). As to their distribution in time, they seem (*Marsenia*) to have appeared late in the tertiary period.

Although the Marseniadæ form, both in habit and structure, a tolerably well-defined group, they differ among themselves not a little in both these respects, but especially in the armature of the tongue; and it is because of this that the different members of the family have been repeatedly severed from one another.[5] With the exception of the

[1] Giard, Sur l'embryologie du Lamellaria perspicua, *Comptes Rendus*, 22 Mar. 1875, pp. 736, 738, 739.

[2] A. Krohn, Üb. einen neuen mit Wimpersegeln versehenen Gasteropoden, *Archiv f. Naturgesch.*, Jahrg. xix., Bd. i., 1853, pp. 223–226, taf. xi. figs. x. i.–ii.

A. Krohn, Nachtr. zu dem Aufs. üb. die Echinospira diaphana, *Archiv f. Naturgesch.*, Jahrg. xxv., Bd. i., 1855, pp. 1–5, taf. i. figs. 1, 2.

A. Krohn, Fernere Nachtr. zu dem Aufsatze üb. die Echinospira, nebst Bemerk. üb. eine ihr verwandte Larve, *Archiv f. Naturgesch.*, Jahrg. xxiii., Bd. i., 1857, p. 252, taf. xii.

[3] Macdonald, Further Observations on the Metamorphosis of Gasteropoda, *Trans. Linn. Soc. Lond.*, 1860, vol. xxiii. pt. 1, p. 70.

[4] A similarly caducous larval shell appears to have been hitherto observed only in the *Cymbuliæ* (by Krohn), where the gelatinous shell of the adult seems to be an altogether independent formation.

[5] Tröschel (Das Gebiss d. Schnecken, 1856–1863, vol. i. pp. 167, 185) placed the *Marseniæ* and the *Chelyonoti* next the *Naticaceæ*; the *Onchidiopsides* and the *Marseninæ* next the *Velutinaceæ*, as had been already proposed by Gray (Guide, 1857, vol. i. p. 46), who had incorporated the former in the Velutinidæ.

Gray wished (Guide, 1857, vol. i. pp. 27, 28) to divide the family into three generic groups, the *Coriocellæ*, the *Lamellariæ* (with *Lamellaria tentaculata* as type), and the *Ermeæ* (with *Ermea perspicua* as type); an unreasonable proceeding in every respect, as to names, characterisation, and grouping.

Marseninæ, which in their youth probably agree with the other members of the family, all possess a continuous, closed mantle, enveloping an internal shell. The edge is either broadened out into a border, or is narrow, thick, and somewhat rounded (*Marseniopsis, Onchidiopsis*). Besides the internal, anterior, inhalent fold and furrow, some genera (*Marsenina, Onchidiopsis*) also possess, on the right, a similar exhalent arrangement. The shell is usually calcareous, though sometimes it is almost (*Marseniella*), or altogether (*Onchidiopsis*) horny. The armature of the tongue is curiously varied, and it is on this ground alone that, as we have mentioned above, attempts have been made artificially to break up the group. The more typical forms exhibit one lateral plate on each side of the median (1–I–1); other genera (*Marseniopsis, Marsenina, Onchidiopsis*) possess, in addition, two external hooks (2–1–I–1–2). But the strangest internal difference is the fact, that, while the great majority of the Marseniadæ are, like other Prosobranchiates, unisexual, two genera, *Marsenina* and *Onchidiopsis*, are monœcious.

CONSPECTUS GENERICUS.

Plica expiratoria nulla.	Armatura lingualis.	1–I–1	pars inf. vas. def. non libera	*Chelyonotus*, Sw.	Diœcia.
			pars inf. vas. def. libera	*Marsenia*, Leach; *Marseniella*, Bgh.	Diœcia.
Plica expiratoria.		3–I–3	Testa interna calcarea	*Marseniopsis*, Bgh.	Diœcia.
			Testa semi-interna calcarea	*Marsenina*, Gr.	Monœcia.
			Testa cornina	*Onchidiopsis*, Bgh.	Monœcia.

The systematic position of the family cannot, in the meantime, be stated with any certainty, owing to our inadequate knowledge of the anatomy of the Prosobranchiata as a whole, and especially of those groups which are most probably the near relations of the Marseniadæ. It can at least be affirmed that they stand in close relationship with the VELUTINACEÆ, which may, perhaps, even be afterwards denied the distinction of forming a separate family. My provisional researches have shown that the latter agree with the Marseniadæ in the form of the nervous system, in general anatomical structure, and especially in the possession of the peculiar foliated stomach. In their hermaphroditism and lingual armature (2–1–I–1–2), the Velutinaceæ are still more closely linked to the monœcious genera *Marsenina* and *Onchidiopsis*. Were it not for the genus *Marseniopsis*, which is again closely bound to the *Marseniæ* proper, one might be induced (with Gray and others) to separate the monœcious genera, and to unite them with the Velutinaceæ in one family. Meanwhile, however, the Marseniadæ, as above discussed, may be regarded as forming a united family.

I. *Marsenia*, Leach.

Animalia diœcia pallio ampliato, supra continuo, antice plica et semicanali inspiratoria. Penis falcatus, apice dilatatus. Lamellæ branchiales lateribus plicis transversalibus instructæ.

Lamellæ mandibulares validiores, structura uniformi (quasi homogena). Dens medianus radulæ basi (fere semper) bifidus; dens lateralis magnus, dorso fissus, hamo curvato marginibus serrulato. Proventriculus non deest. Pars inferior varis deferentis in cavitate abdominali pro parte libera.

Testa interna calcarea, lactea, nonnihil diaphana, lævis, obovata, spirata, anfractibus vix tribus; spira ad $\frac{1}{4}$ longitudinis sita, prominenti, acutiuscula, anfractibus vix duobus; apertura ampla, ovata, patente usque in fundum spiræ, columella antice sinu levi excisa.

1. *Marsenia tentaculata* (Mtg.).
   Mare atlant. orient.
2. *Marsenia producta*, Leach.
   Mare atlant. orient.
3. ***Marsenia perspicua***[1] (Linné).
   Var. (?) Morelli, Delle Chiaje.
   Mare mediterr.
4. ***Marsenia dubia***, n. sp.
   Mare atlant. orient. (Cape Verde).
5. ***Marsenia pellucida*** (Verrill).
   Mare atlant. occid.
6. *Marsenia stearnsii* (Dall).
   Mare pacific. (Californ.).
7. *Marsenia orbiculata* (Dall).
   Mare pacific. (Californ.).
8. ***Marsenia latens*** (O. Fr. Müller).
   Mare atlant. or. sept.
9. (?) *Marsenia rangii*, Bgh.
   Mare antillense.
10. *Marsenia minuta* (H. Adams).
    Mare rubrum.
11. ***Marsenia cabulana***, Bgh., n. sp.
    Mare philippin.
12. ***Marsenia affinis***, Bgh., n. sp.
    Mare philippin.
13. ***Marsenia gemma***, Bgh., n. sp.
    Mare philippin.
14. ***Marsenia indecora***, Bgh., n. sp.
    Mare philippin.
15. ***Marsenia isabellina***, Bgh., n. sp.
    Mare philippin.
16. ***Marsenia diegœnsis*** (Dall), n. sp.
    Mare pacific.
17. *Marsenia ophione* (Gray).
    Mare pacific. (Nov. Zel.).
18. *Marsenia Kerguelenensis* (Studer).
    Mare pacific. australe.
19. *Marsenia* (?) *translucida*, Blv.
    Hab.?
20. *Marsenia depressa*, Wood.
    Crag (Sutton).

II. *Chelyonotus* (Swains.), Bergh.

Animalia dicœcia, Marseniis propriis similia; sed plica respiratoria producta, apice interdum bifida. Lamellæ branchiales fere ut in Marseniis.—Lamellæ mandibulares et armatura lingualis fere ut in Marseniis, sicut proventriculus. Vas deferens in cavitate abdominali non liberum sed in pariete abdominali omnino inclusum.

Testa interna fere omnino ut in Marseniis sed magis calcarea.

1. ***Chelyonotus semperi***, Bgh.
   Mare philippin.
2. ***Chelyonotus tonganus*** (Quoy et Gaim.).
   Mare indicum.
3. *Chelyonotus tuberosus* (Stimpson).
   Mare chinense.
4. *Chelyonotus* (?) *punctatus* (Stimpson).
   Mare chinense.

[1] The species indicated by larger italic type have been anatomically examined by the author. The bracket indicates that the species enclosed by it are nearly related to each other.

III. *Marseniella*, Bgh., n. gen.

Animalia dicœcia, Marseniis propriis similia. Lamellæ branchiales, lamellæ mandibulares et armatura lingualis ut in Marseniis. Proventriculus deest. Pars inferior varis deferentis ut in Marseniis libera.

Testa fere cornina; spira minuta; anfractus ultimus maximus, postice solutus.

Marseniella borealis,[1] Bgh., n. sp.
Mare arcticum orient.

IV. *Marseniopsis*, n. gen.

Animalia dicœcia forma generali Onchidiopsidibus similia, corpore ita quasi sphæroideo, quasi inflato, sed solummodo plica et semicanali (inspiratoria antica); os externum subanticum.—Lamellæ mandibulares minores, angustæ. Armatura lingualis fere ut in Marseninis et in Onchidiopsidibus (2–1–I–1–2).

Testa interna calcarea ut in Marseniis.

1. *Marseniopsis pacifica*, n. sp.
Mare pacificum.

2. *Marseniopsis murrayi*, n. sp.
Mare pacific.

V. *Marsenina*, Gray.

Animalia monœcia, Marseniis propriis similia, sed fissura pallii submediana partem testæ denudatam relinquente. Præter semicanalem anteriorem (inspiratoriam) semicanalis dextra (expiratoria) adest.—Lamellæ mandibulares fortiores e seriebus baculorum breviorum compositæ. Armatura lingualis ut in Onchidiopsidibus; præter dentes laterales utrinque duo uncinati (2–1–I–1–2).

Testa semi-interna (dorso plus minusve denudata), calcarea, illi Marseniarum non dissimilis.

1. *Marsenina prodita* (Lovén).
Mare atlant.
2. *Marsenina glabra* (Couth.).
Mare atlant. occ.
3. *Marsenina ampla*, Verrill.
Mare atlant. occ.
4. *Marsenina rhombica* (Dall).
Mare pacific. (Calif.).
5. *Marsenina grœnlandica* (Möller).
Mare grœnland.
6. *Marsenina dalli*, n. sp.[2]
Mare pacific.

VI. *Onchidiopsis* (Beck), Bergh.

Animalia monœcia, pallio sphæroideo, quasi inflato; præter plicam et semicanalem anteriorem (inspiratoriam) plica et semicanalis dextra (expiratoria) adsunt. Os externum

[1] The species indicated by larger italic type have been anatomically examined by the author.

[2] This remarkable species has the shell quite inclosed, and there is no trace of a fissure on the back.

subanticum. Penis compressus, quasi convolutus, quasi alatus, apice cylindrico obtuso. Margo lateralis podarii incrassatus.—Lamellæ mandibulares ut in Marseninis, sed prominentia dentiformi marginis anterioris instructæ. Armatura lingualis ut in Marseninis (2–1–I–1–2).

Testa interna cornina, scutiformis, non spirata.

1. ***Onchidiopsis grœnlandica,***[1] Bgh.
Mare arcticum (atlant., pacific.).

2. ***Onchidiopsis glacialis*** (M. Sars).
Mare arcticum (atlant.).

[1] The species indicated by larger italic type have been anatomically examined by the author.

DESCRIPTIONS OF SPECIES.

Marseniadæ.

Marsenia, Leach.

The genus *Marsenia* proper was established by Leach as early as 1820. These animals are not of large size. The mantle, which is closed above, has a broad border, and there is only one sub-pallial respiratory fold and furrow, lying anteriorly, and leading into the left side of the branchial opening. The calcareous shell, which is entirely inclosed, has a small spiral with a somewhat wide opening, and with a distinct columellar sinus. The *Marseniæ* have large, lancet-shaped *branchial leaflets*, which are covered laterally with *transverse folds*. The *mandibular plates* are strongly developed, and composed not of rows of rods, but of a tolerably uniform (homogeneous) mass, with a broad biting or chewing margin. The *median tooth plates* of the tongue have their posterior margin almost always deeply cleft; the strong lateral plates have their hook denticulated on each margin, but unequally toothed. There is always a large *proventriculus*. The sexes are separate; the inferior portion of the *vas deferens* is quite *free*, partly covering with its coils the bulbus pharyngeus and the foliated stomach. The flattened, sickle-shaped penis is somewhat broadened terminally.

The true *Marseniæ* occur in all seas, both tropical and arctic. But little is known of their general biological relations. The ontogeny of a typical form has been partially followed.[1]

Marsenia dubia, n. sp. (Pl. I. figs. 1–6).

Habitat.—Eastern North Atlantic, off Cape Verde.

Only one specimen (a male) was found, on the 28th July 1873, near St Vincent, Cape Verde.

This small form measured 4·5 mm. in length, about 4 in breadth, and 1·75 in height. The general *colour* was whitish, and the yet whiter shell shimmered through the dorsal surface. In *form* it agreed with the typical *Marseniæ;* the respiratory fold of the mantle

[1] Cf. also my monograph of the Marseniadæ, which will shortly appear (1886, 1887), as Supplement III. to my Malacological Researches, in Semper's Account of his Travels in the Philippines: Reisen im Archipel d. Philippinen, &c.

margin was almost median; the upper surface of the mantle almost even; the border as usual, or somewhat narrower, with the ordinary radiating stripes on the lower surface. The *shell*[1] had a normal relative size, a small and but slightly protruding spiral, with the last turn extremely large. The shell was not specially thin, but somewhat hyaline, of a white colour, and exhibiting fine lines of growth. The internal (shell) surface of the mantle was quite colourless.

On removing the shell the muscle-facettes were seen as usual (fig. 2), and the *superior* visceral mass was arranged in the ordinary fashion. The pale yellowish-white reproductive organ (testis) (fig. 2, *b*), somewhat whiter at the extremity, lay posteriorly. At the posterior edge of the visceral mass, the stomach (fig. 2, *a*) and intestine were seen shining through. In front of the testis was placed the greyish foliated gland, through which the intestine with its white excrement masses (fig. 2, *c*) could be seen, while in front of the former extended a broad white stripe of secreted substance. Further forward lay the bow-shaped branchia, at its left end the small kidney (fig. 2, *d*) and the pericardium, with the heart shining through. In front of the gill the unusually large olfactory organ was situated (fig. 2, *e*). Through the roof of the *inferior* visceral mass or floor of the respiratory cavity, the viscera could be seen very much as usual; in front, the bulbus pharyngeus filling about half of the space, with the radula-sheath rolled up behind it, and further back the yellow "foliated stomach."

The *central nervous system* was of unusual relative size. The ganglia were in other respects exactly as in the typical *Marseniæ*, except that the infra-intestinal was perhaps somewhat larger; the pedal somewhat shorter and more triangular, possessing besides the usual secondary, short-stalked ganglion on the anterior end. The *tentacles* and *eyes* were as in the other *Marseniæ* (fig. 1). The *otocysts* also appeared as usual, with round, milk-white sheaths, lying just outside the pedal ganglia. They measured approximately 0·08 mm., and enclosed a yellowish otolith of about 0·05 mm. in diameter. The *olfactory organ* was, as we have mentioned, unusually large, exhibiting on each side about 20 rather thick folia.

The *bulbus pharyngeus* had the usual form, and was of a whitish colour; the cartilaginous patches were distinct, and the yellowish *mandibular plates* were perhaps a little longer than in the typical species. The *tongue* had the usual character, and possessed 11 rows of tooth plates, of which the 5 foremost were more or less injured. The radula-sheath was fully twice as long as the bulbus, and contained 28 developed, and 5 younger rows of teeth, making altogether 44. The plates were very faintly yellow; the median had a maximum length of 0·088 mm., with a breadth of 0·06 mm.; and the lateral were 0·12 mm. long. The *median* plates (figs. 4, 5, *a*) were longer than in the typical species; the hook and denticles (2–4 on each side) were typical, the left limb also a little longer than

[1] Owing to the minute size of the animal, it was impossible to remove the shell without breaking the last whorl.

the right. The *lateral* plates (figs. 5, *b*, *b*, 6) agreed with those of the typical form, exhibiting on the posterior (superior) cutting edge of the hook almost always about 12 comparatively fine denticles, and on the anterior (inferior) edge 4 very strongly developed.

The *œsophagus* did not differ from that of the other *Marseniæ*, it was posteriorly enlarged, and exhibited far back the usual somewhat long saccular dilatation. The *foliated* or *glandular stomach* had a yellowish colour, and a cap-like shape due to the concavity of the anterior surface; the stomach-cavity was as usual small, and the thick wall exhibited the normal foliated structure of a glandular character. This stomach was covered by the usual rather thick *glandular layer*. The slightly ascending pyloric tube opened into the *true stomach*, which lay along the right side of the posterior wall of the superior visceral mass. Near the pyloric opening was that of the bile-duct. The stomach was continued on the left into the *intestine*, which was throughout the greater part of its course filled with white, round or oval excrement balls. It was continued along the anterior surface of the liver, and further forwards (fig. 2). The contents of the digestive cavity were unrecognisable animal fragments. The *liver* was yellowish white, and in other respects as in other *Marseniæ*.

The pericardium and the heart, the kidney and the foliated gland, exhibited the usual structure and relations (fig. 2).

The faintly yellow *testis* was destitute of ripe gonoblasts. The *vas deferens* formed the usual twisted ball, and extended forwards in a straight, and afterwards in a coiled course, first within the body-wall, and then free to the *penis*. The latter (fig. 3, *a*) exhibited terminally an unusually marked protrusion (fig. 3, *b*) of the *vas deferens*.

This form of *Marsenia*, though somewhat doubtful, seems to differ from the Mediterranean species, though it is perhaps only a local variety.

Marseniopsis, n. gen.

The *Marseniopsides* differ strikingly from the other Marseniad genera. They form a beautiful transition-link between the diclinous and the androgynous (*Marsenina*, *Onchidiopsis*) Marseniadæ, and distinctly demonstrate a unity of relationship which makes it impossible to split up the family. In their general form *they agree with the Onchidiopsides;* the superior part of the body is hemispherical, as if distended; the mantle margin is thick and swollen; the external mouth lies far forwards. They have, however, *no right exhalent fold* nor associated semi-canal, and the branchial folia rather resemble those of the *Marseniæ*. The mandibular plates are narrower, and, on the whole, smaller, than in other Marseniadæ. The *lingual armature*, on the other hand, *agrees exactly with that of the androgynous forms;* outside the lateral teeth there are, in addition, two hooked plates. The *Marseniopsides* have the *sexes separate*. The anatomical relations resemble most closely those of the *Chelyonoti;* the inferior portion of the *vas deferens* does not lie

freely in the lower body-cavity; the penis most nearly resembles that of the *Marseniæ* proper. The *shell* is also, on the whole, like that of the typical Marseniæ.

The only representatives of the genus, as yet known, are the two new South Sea[1] species about to be described.

1. *Marseniopsis pacifica*, n. sp. (Pl. I. figs. 7–27).

Habitat.—Southern Ocean (Kerguelen Island).

Only one representative (female) of the species was obtained, by the dredge between 10 and 100 fathoms.

In its preserved state the animal measured 18 mm. in length, 13·5 in breadth, and 12 in height. The foot had a length of 13, and a breadth of mostly about 5·5 mm., increasing to 8 in front. The length of the tail was 6 mm., and that of the tentacles 4 mm. The *colour* of the upper surface was reddish yellow with several almost purple-red spots, and also apparently with scattered white nodules; the under surface of the animal was yellowish white.

The back was covered with coarse tubercles, very much as in the *Onchidiopsides*, which this form on the whole resembled. The respiratory canal measured 4–5 mm., was anteriorly bent slightly upwards, but otherwise exhibited the usual characters. The mantle border was thick, swollen, and not very broad. The ordinary stripes round the base of the foot were absent; the foot was as usual, except that the furrow of the anterior margin was very strongly developed, especially towards the middle line, where a slit-like hole was formed. The head and tentacles exhibited the ordinary form. The shell and the viscera were indistinctly seen as a greyish mass shining through the dorsal surface. The inside of the mantle, adjacent to the shell, was almost white. The shell (fig. 7) measured 15 mm. in length, about 12 in breadth, and 10 in height. The spiral was small, and exhibited two turns; the last turn was very large and much vaulted. Through the thin calcareous shell was seen the dark-grey coating of the superior visceral mass.

After removing the shell and the enveloping coat, the superior viscera exhibited the following arrangement (fig. 8). Far back lay the large, whitish, apparently granular ovary (fig. 8, *a*); in front of this was situated the large, very faint greenish-grey foliated gland (fig. 8, *b*), and across the lower surface of the latter the whitish intestine could be seen. Further forward to the right lay the faint yellow mucus- and albumen-gland, with the white rectum along the left side; both rectum and gland extended forwards. To the left was seen the roof of the branchial cavity, apparently of a white colour, owing to the presence of the secreted substance (fig. 8, *d*) of the kidney or of the foliated gland. Before

[1] According to a note which I made in 1873, in the British Museum, there is a specimen there, obtained in "Sholl Bay, Strait of Magellan," which might, perhaps, belong to this genus.

this white portion, to the left, lay the branchia, with the small kidney at its posterior left end, while in front, more to the left, the olfactory organ was situated, and at the posterior extremity of the latter, the pericardium. Near the hinder end of the mucus and albumen gland, the larger, right, triangular, shell-muscle facette arose (fig. 8, *c*); the left facette, which was longer, narrower, and on the whole smaller, lay on the left side of the anterior margin of the pericardium and posterior end of the olfactory organ. On the under side of the last turn of the shell, on the right, lay the ovary. Shining through, on the left side of this turn, the stomach could be seen for a short distance, of a grey colour, but elsewhere covered by the whitish liver.

The bulbus pharyngeus, the more distinct radula sheath, and the foliated stomach, were seen shining through the floor of the branchial cavity, and all exhibited the normal relations.

The *central nervous system* was in essential agreement with that of the typical *Marseniæ*. The arrangement of the ganglia was perfectly typical. Of the two cerebral ganglia, which lay anteriorly (fig. 10, *a*), the left was smaller than the right and less markedly separated from the pleural. The two pleural ganglia, which (fig. 10, *b*, *b*) lay behind the cerebral, were almost as large as the latter, and again the left was somewhat smaller than the right. The supra-intestinal ganglion, situated above the left cerebro-pleural mass, had (fig. 10, *d*) a long oval form, and was united by a very short connective with the left pleural, and by a long connective with the right (fig. 10). The infra-intestinal ganglion (fig. 10, *c*), was as usual compressed, had a somewhat bent form, and was superiorly connected with the right pleural by a short band, while inwards (to the left) it was united to the left pleural by a long connective. The pedal ganglia (fig. 11) lay beneath the others, and were almost entirely enveloped by a continuation of the white glandular layer covering the foliated stomach. They approached one another in the middle line, and each was short and irregularly pear-shaped, with the tubercle-like process (fig. 11, *a*, *a*) at the anterior end. The right pedal was connected as by a short process with the right cerebro-pleural mass, while the other was united to the left mass by two longer, separate, cerebro- and pleuro-pedal connectives (fig. 11, *b*, *b*). The buccal ganglia (fig. 10, *e*) were plano-convex, and were about a third the size of the cerebral. They were united by a commissure which was about twice as long as the diameter of the ganglia. The nerves seemed to originate in the same way as in the typical *Marseniæ*.

The *eyes* appeared as in the *Marseniæ* (fig. 9), and two white calcareous points visible below the pedal ganglia and embedded in the pedal musculature represented the usual *otocysts* (fig. 11, *c*, *c*). They measured about 0·24 mm. in diameter, and the dull calcareous, spherical otolith about 0·1 mm. The auditory vesicles seemed to be connected by a fine nerve with the external inferior portion of the relative pedal ganglion. The feather-like *olfactory organ* exhibited a structure exactly like that of the *Marseniæ* proper, and was provided on each side with thirty-five leaflets.

The *external mouth* (fig. 9) lay further forward on the under side of the head than in the

true *Marseniæ*. The whole rostrum, the mouth-tube, was as usual (fig. 12, *a*). The whitish bulbus pharyngeus (fig. 12) exhibited the ordinary characters; it was about 3 mm. long by 2·5 broad and 2 thick; the cartilaginous or tendinous patches (fig. 12, *b*) lay as usual on the hinder end, and the *Musculi laterales, superior* and *inferior* (fig. 12, *b*) had the normal relations. The usual radula sheath (fig. 12, *d*) projected from the cleft posterior end; when unrolled and extended it measured approximately 5 mm. The sides of the downward-directed, slit-like, internal mouth (fig. 13, *a*) each bore a firm, dull horny-yellow *lip plate*, somewhat narrowed anteriorly and posteriorly, and attaining a length of about 0·6 mm. (fig. 13, *b*, *b*). The ends of the plates did not meet. The plates were composed of as many as twenty, closely packed, indistinctly separated rows of rods, which attained a height of as much as 0·068 mm., and were slightly bent above (fig. 14). The whole internal surface of the external mouth opening was lined by a colourless, somewhat thick cuticle, shining through which the ends of the epithelial cells were visible, producing a tabulated appearance (fig. 15). The yellow radula (fig. 16) bore 20 rows of tooth plates, 9 of which were covered, while, within the sheath, there were 30 developed and 5 immature rows, making a total of 55. The tooth plates were of a bright yellow colour; the median attained a length of 0·12 mm., the lateral had a maximum height of 0·18, and the first (innermost) and second external plates measured respectively 0·17 and 0·16 mm. The sides of the *median plates* were usually parallel, four or five denticles lay on each side of the strongly developed point (figs. 16, *a*, 17, 18, 20, *a*). The form of the *lateral plates* (figs. 16, *b*, *b*, 19, *a*, 20, *b*) was essentially the same as that in the Marseniadæ generally. The basal portion was bevelled, and had a compressed conical shape, the point was turned upwards and inwards, and bent in a somewhat hook-like curve. The under surface of the basal portion (fig. 20, *b*) was broad and almost square, and in front of this lay the cleft which received the hook of the basal portion of the tooth in front (fig. 20). The basal portion passes into the small hook (fig. 19, *a*), which is bent almost at right angles and exhibits a strong sharp point; the hook has usually 6 to 12 or sometimes only 4 to 5 small denticles on the posterior upper margin, and almost always 4 of a coarser character on the turned-down anterior lower edge (figs. 16, *b*, *b*, 19, *a*). On the outside of the lateral plates, the first *external plate* was hook-shaped, upright, and strongly developed, with a broad and somewhat peculiar basal surface (figs. 19, *b*, 21, *a*); the second external tooth, outside the former and a little behind it, was less strongly developed, and had a smaller, simpler base (fig. 21, *b*). Both these external tooth plates were entirely destitute of denticles.

The *œsophagus* (fig. 12, *e*, 22, *a*) was wide, and dilated into a sort of crop posteriorly and inferiorly (fig. 22, *b*). The second crop which always occurs in the true *Marseniæ* was here entirely absent. The yellowish-white *foliated stomach* (fig. 22, *c*) was as usual hemispherical, was somewhat markedly concave on the anterior side, measured about 2·5 in length, 4·5 in maximum breadth, and as much as 2·25 mm. in height, and exhibited the ordinary foliated structure. The folia themselves were as usual; they seemed only 10 in

number, and were sometimes united in pairs at their origin on the periphery. The superior surface, part of the anterior end, but especially the under side of this stomach, were enveloped in the ordinary *glandular layer* of the Marseniadæ. This white coat extended further along the lower side of the bulbus pharyngeus, quite covering and partly enveloping the pedal ganglia. From the pyloric end of the foliated stomach a short canal extended in the usual fashion (fig. 22, *d*) to the *true stomach*. The latter was rather spacious, rounded at the right-hand end, and its walls almost without a fold. The stomach was continued on into the *intestine* almost without a boundary. The latter formed the ordinary bend (fig. 8), and ended at the anal papilla, on the left side of the vulva (fig. 27, *b*). Close to the pyloric was situated the large round bile-duct opening.

The *stomach* and the *intestine* were filled with indeterminable contents, and the rectum contained compressed white excrement balls, having a diameter of as much as 1 mm.

The *liver* was large, white externally and greyish yellow internally.

The *pericardium* and heart exhibited the usual structure. Posteriorly, on the internal wall of the former, the round pericardiaco-renal aperture was seen with unusual distinctness (fig. 24, *a*).

The *kidney* was formed of the ordinary glandular bands; the pericardiaco-renal aperture above mentioned was more distinct than the opening into the branchial cavity which lay at the base of the posterior wall somewhat to the left.

The large *foliated gland* (fig. 8, *b*) exhibited the typical structure, which was, however, specially well developed (fig. 25).

The *branchia* was provided with about 75 leaflets, which (fig. 23) hung down to a less extent and straighter than is elsewhere the case among the true *Marseniæ*. On the sides of the leaflets the characteristic transverse folds of the *Marseniæ* were also observed (fig. 23).

The *ovary* was very large, and occupied most of the posterior half of the wide, terminal, visceral winding (fig. 8, *a*). The ordinary structure was exhibited, and large oogenetic cells were seen in the lobules. The short *oviduct* led, posteriorly and to the right, into the upper end of the mucus- and albumen-gland. Behind this, shining through the thin layer of the foliated gland, the calcareous-white, spherical, *seminal receptacles* (fig. 8) could be seen. These attain a maximum diameter of 1 mm. Four were present, swollen with semen, and of almost equal size. The ducts were about twice as long as the seminal receptacles, and opened close together on the right side of the *mucus- and albumen-gland* (fig. 26, *b*). This gland (fig. 8, *c*) measured about 6 mm. in length, with a maximum breadth of 4 mm., and a thickness up to 4 mm., was of a yellow white colour, and presented the ordinary finely granular appearance (fig. 26, *a*). It consisted, as usual, of a right and a left portion, differing slightly in colour. The structure and the flattened cavity exhibited the usual characters. The *vagina* (fig. 27, *a*) was short and strongly developed; the thick, muscular diverticulum (fig. 27, *c*) about 3 mm. long, ascending along the right side of the mucus gland; the cavity was narrow, with longitudinal folds on the wall.

2. *Marseniopsis murrayi*, n. sp. (Plate I. figs. 28–38).

Habitat.—Southern Ocean, off Marion Island.

Only a single (male) specimen of this species was dredged on the 26th December, 1873, from a depth of 50 to 75 fathoms, near Marion Island.

The specimen, as preserved in alcohol, had a length of 18 mm., a maximum breadth and height of 15 and 12·5 mm. respectively. The foot was 15 mm. long, and had an anterior breadth of 6·5 mm.; the breadth of the mantle border was 4 mm., the length of the penis 7, of the tentacles 4, and of the tail 8 mm. The general *colour* was (greyish) reddish brown, the lower side of the mantle border and the neck portion were yellowish white.

The *dorsal surface* was much arched, and covered with depressed, rounded tubercles; the border of the mantle was thick and very like that of the *Onchidiopsides;* the respiratory canal was bent upwards and lay in an almost median position; the head and tentacles were as usual. The inside of the mantle, adjacent to the shell, had a reddish white colour. The *shell* measured 13·5 mm. in length, 10·5 and 8 mm. in maximum breadth and height respectively. It was very hard and brittle, and quite thin.[1]

After removing the shell, the viscera were seen in the ordinary arrangement; posteriorly, the large apparently granular, faintly reddish-yellow testis, with a narrow, dark brownish-grey border arising from the liver. In front of the testis lay the bright reddish-grey foliated gland, shining through which the somewhat darker intestine was seen. Before the former there lay a broad, glistening white band, consisting of distinctly separated portions, arranged longitudinally, and resulting from the products of the kidney and of the foliated gland. At the left corner of this band, the bright reddish-brown kidney was situated, and in front of the foliated gland the branchia and the olfactory organ could be faintly seen shining through, while the anterior end of these two organs projected somewhat markedly from the branchial cleft. The small facettes of the shell-muscles lay far forward.

The viscera of the lower body-cavity could be but indistinctly seen shining through the floor of the branchial cavity; the *vas deferens* was distinctly visible towards the root of the penis.

The *central nervous system* was exactly as in the above-described species. The *otocysts* were seen as white calcareous points, lying however more externally than in the above.

The *bulbus pharyngeus* was as before, but smaller; the lip plates exhibited the already described structure (fig. 28), and measured 0·75 mm. in length. The *tongue* was furnished with 24 rows of tooth plates, of which the first 5 were more or less defective; further back there were 40 developed and 8 younger rows, making a total of 72. The median plates had almost constantly 6 to 8 denticles on each side of the rather long pointed

[1] In the specimen examined the mantle had been opened and an attempt made to take out the shell, which had thus been broken into several pieces; these still remained, however, in their original place.

hook (figs. 29, 30). The lateral plates were more slender than in the previous species, the denticles of the posterior edge were quite minute or almost entirely absent (figs. 31, 32, 33, *a*); the two external plates were almost exactly as in the above-described form (fig. 33, *b*).

The *œsophagus* was wide and enlarged posteriorly into a crop; there was no second enlargement. The *foliated stomach* was, as before, very much hollowed anteriorly, and had a dirty brownish-yellow colour. The whole anterior half and lower surface of this stomach was enveloped in the (faintly yellow) white *glandular layer;* the posterior half of the bulbus pharyngeus, including the radula, was quite covered over by it, as also the whole of the central nervous system. The *true stomach* was almost completely surrounded by the liver, and was smaller than usual. The *intestine* exhibited a shorter bend than ordinarily, but was otherwise typical. The contents of the digestive cavity were unrecognisable animal remains.

The *liver* was very large, of a dirty brown colour, and extended up, under the testis, to the apex of the spiral. The kidney and foliated gland did not differ from those of the previously described species.

The large yellow testis exhibited the ordinary structure (fig. 34). In the lobules were seen the usual very long, hair-like spermatozoa; but besides these (figs. 35, 36) others were present, having a length of only 0·1 to 0·2 mm., and in these forms the thicker (attached) end was drawn to a sharp point, the proximal extremity also often terminating in a process. Like the others, they form large, more or less radiating groups. The *vas deferens*, arising from the testis on the right, not far from the spiral, with several short thick main branches, measured 0·7 to 1 mm. in thickness. It was white in colour, though here and there exhibiting a greenish and iridescent shimmer. It extended forwards for about 12 mm., and then became associated with the very long prostate *diverticulum*, which was rolled up within the coils of the vas deferens, and which when unrolled measured 4 cm. in length, and 0·75 to 1·5 mm. in diameter. The vas deferens extended in a coiled course to the region of the shell-muscle, measuring, when unrolled, about 3·5 cm., with a diameter of 1 to 0·75 mm. In these last coils it was more solid and muscular; then becoming thinner it was continued in small loops, within the body-wall, covered over by a thin muscular layer, to the penis. Here and there, as far as this last stretch, the vas deferens exhibited, like the diverticulum, a greenish shimmer and iridescence. The *penis* (fig. 38) had the usual long extended form, and a biconvex section; the end was a little flatter, but hardly at all broader; the opening of the seminal duct lay immediately in front of the rounded point (fig. 38, *b*); the vas deferens, accompanied by a strongly developed nerve, extended in the usual fashion through the penis.

This species, probably differing from the preceding in *colour*, is perhaps also distinguished by the *lingual armature*, in which the median plates have a more strongly toothed cutting edge and a longer hook, while the lateral plates are, on the whole, more slender, and almost entirely destitute of teeth on the upper edge of the hook.

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EXPLANATION OF THE PLATE.

Marsenia dubia, n. sp.

Figure 1.—The head, from above, with tentacles and ophthalmophoria. Cam. luc. × 100 diam.

„ 2.—The superior intestinal mass, after removal of the shell; *a*, the true stomach; *b*, the hermaphrodite gland; *c*, the foliated gland; *d*, the pericardium, at its right side the kidney;* *e*, the olfactory organ, behind it the gill; the muscular facettes very distinct to the right and left; at the anterior margin the shell-fillet.

„ 3.—*a*, the penis; *b*, protruded end of the vas deferens. Cam. luc. × 100 diam.

„ 4.—A median plate of the radula, from below. Cam. luc. × 350 diam.

„ 5.—Part of the radula, from above; *a*, median plate; *b*, *b*, lateral plates; *c*, fillet of the radula. Cam. luc. × 750 diam.

„ 6.—Lateral plate, from the under side. Cam. luc. × 750 diam.

Marseniopsis pacifica, n. sp.

Figure 7.—The shell, from the right side, × 2.

„ 8.—The superior intestinal mass after removal of the shell, × 2; *a*, ovary; *b*, foliated gland; *c*, right muscular facette, and above this the mucus gland; *d*, space between foliated gland and *e*, gill.

„ 9.—Head, from the under side, with tentacles and ophthalmophoria.

„ 10.—Central nervous system, from above; *a*, cerebral ganglia; *b*, *b*, pleural ganglia; *c*, infra-intestinal ganglion; *d*, supra-intestinal ganglion; *e*, buccal ganglia.

„ 11.—Pedal ganglia; *a*, accessory pedal ganglia; *b*, *b*, cerebro-pedal and pleuro-pedal connectives; *c*, *c*, otocysts.

„ 12.—The bulbus pharyngeus, from the side; *a*, mouth tube; *b*, cartilaginous patch; *c*, Musculus lateralis inferior; *d*, radula-sheet; *e*, œsophagus.

„ 13.—*a*, anterior margin of the labial-disc; *b*, *b*, mandibular plates.

„ 14.—Anterior part of a mandibular plate; *a*, anterior end. Cam. luc. × 350 diam.

„ 15.—Cuticula of the external mouth. Cam. luc. × 350 diam.

„ 16.—Part of radula, with three series of plates, from above. Cam. luc. × 350 diam. *a*, median plates; *b*, *b*, lateral plates; *c*, external hooks; *d*, *d*, fillet of the radula.

„ 17.—Two median plates. Cam. luc. × 350 diam.

„ 18.—Two other median plates. Cam. luc. × 350 diam.

„ 19.—*a*, lateral plate; *b*, innermost external hook. Cam. luc. × 350 diam.

„ 20.—*a*, median plates; *b*, lateral plates, from the under side. Cam. luc. × 350 diam.

„ 21.—*a*, innermost; *b*, outermost of the two external hooks; *c*, fillet of the radula. Cam. luc. × 350 diam.

„ 22.—*a*, œsophagus; *b*, wider part of the same; *c*, foliated (glandular) stomach; *d*, gut ascending to the true stomach.

„ 23.—Branchial leaf; *a*, anterior margin. Cam. luc. × 55 diam.

„ 24.—Renal organ, from the under side; *a*, pericardio-renal aperture.

„ 25.—Part of the foliated gland.

„ 26.—*a*, mucus- and albumen-gland; *b*, seminal vesicles.

„ 27.—*a*, vagina; *b*, vulva; *c*, vestibular sac.

Marseniopsis murrayi, n. sp.

Figure 28.—Transverse section of a whole mandibular plate; *a*, posterior part; *b*, anterior part.

„ 29.—Median plate, from the side. Cam. luc. × 350 diam.

„ 30.—Median plate, from above. Cam. luc. × 350 diam.

„ 31.—Lateral plate, obliquely from the under side. Cam. luc. × 350 diam.

„ 32.—Lateral plate, from the side. Cam. luc. × 350 diam.

„ 33.—*a*, lateral plate; *b*, external hooks. Cam. luc. × 350 diam.

„ 34.—Lobe of the testis; *a*, efferent duct.

Figures 35, 36.—Zoosperms.

Figure 37.—A number of Zoosperms (?) from the testis.

„ 38.—Penis; *a*, base; *b*, opening of the vas deferens.

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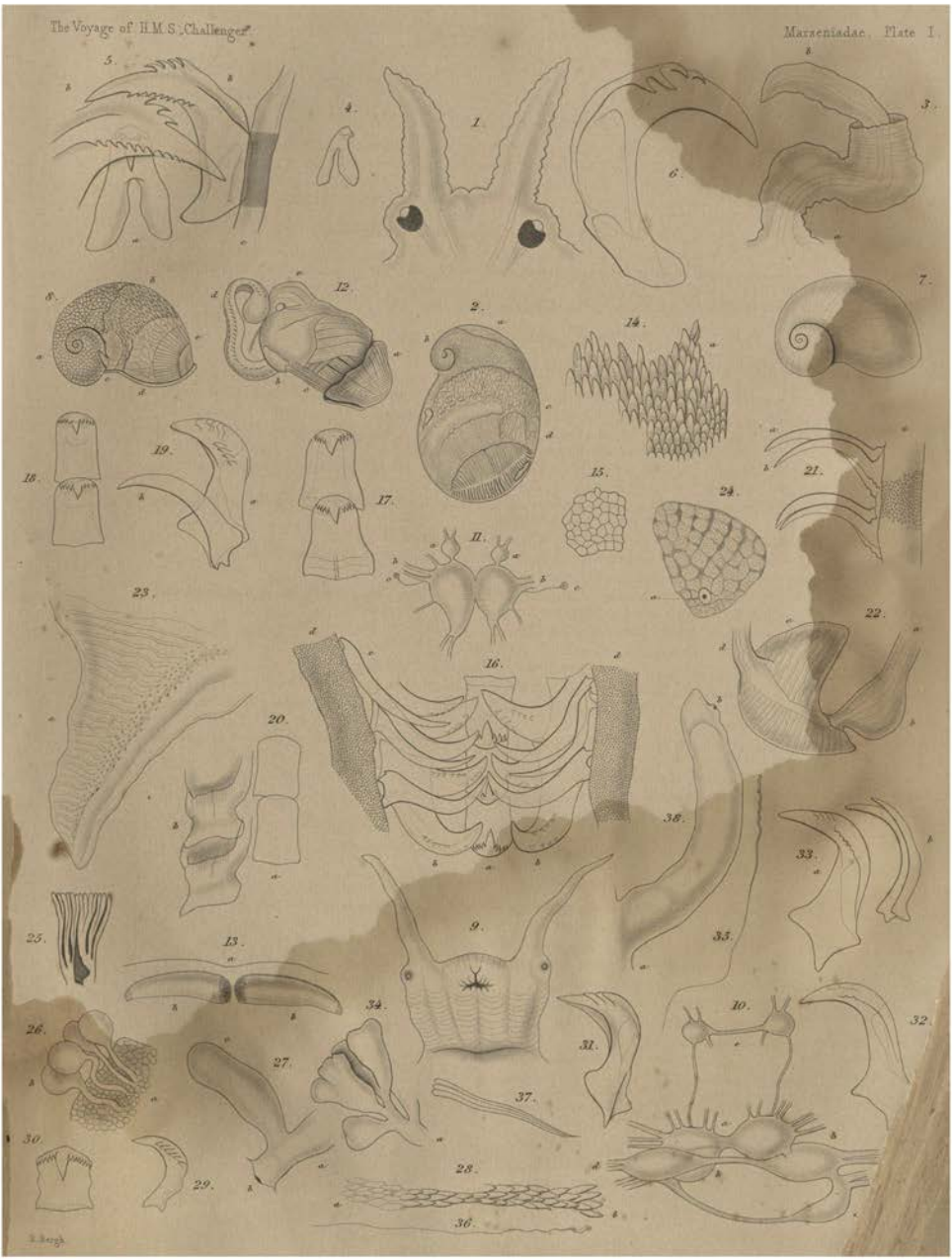
* The letter *e*, indicating the olfactory organ, has been omitted in the plate.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THE

VOYAGE OF H.M.S. CHALLENGER.

ZOOLOGY.

REPORT on the SCAPHOPODA and GASTEROPODA collected by H.M.S. CHALLENGER during the Years 1873–76. By the Reverend ROBERT BOOG WATSON, B.A., F.R.S.E., F.L.S., F.G.S., &c., Ehrenmitglied des naturwissenschaftlichen Vereins, Lüneburg; Minister of the Free Church of Scotland, Cardross.

INTRODUCTION.

THE Scaphopods and Gasteropods of the Challenger Expedition form a fairly compact group, including about 1300 recognisable species, new and old, with some 400 indistinguishable forms. In many cases the specimens are few and poor. At twenty-eight places not reckoned as dredging stations, but where gatherings were made on the shore, in harbour, or in quite shallow water outside, 79 old species, 7 new, and 5 indistinguishable forms were found, or 91 in all—on an average 3 from each. At seventy-five stations, with depths varying from 0 to 400 fathoms, 604 old species, 405 new species, and 341 indistinguishable forms were found, or 1350 in all, giving an average of 18 forms from each. At forty-one stations, whose depths range from 400 fathoms down to 2650 (Station 325—South Atlantic—the greatest depth at which any specimens of the group were obtained), there were found 89 old species, 135 new, and 46 indistinguishable forms, or in all 270, being less than 7 forms from each.

All persons interested in the Mollusca must feel some disappointment that these groups are not, both in individuals and in species, better represented. The increasing rarity of specimens in proportion to the depth of the station has been accepted as the foundation of generalisations regarding the poverty of animal life in the great depths, regarding the existence of zones of deadness, and regarding even the origination of Molluscan life in shallow rather than in deep water, opinions which may indeed be true,

but concerning which the necessary data are yet wanting. In water 1500 or 2000 fathoms deep the dredge cannot, in favourable circumstances, be recovered in much less than 2 or 3 hours, during all which time a process of washing and sifting goes on as the vessel at the surface sways and pitches, and the dredge below to some extent at least is jerked and dragged through the water. The result is, of course, inevitable that while impacted mud remains in the dredge or trawlbag, many of the loose shells which can pass through the meshes are lost. In these circumstances it is not wonderful that the deeper the water the fewer are the shells secured, and that the deep-sea dredging expeditions following that of the Challenger, and using wire rope, which permits more dredgings to be made in the same space of time, have apparently obtained from the Gulf of Mexico, from the North-East Atlantic, and from the Mediterranean results relatively richer than those which the Challenger presents. This shows that mechanical improvements may yet be introduced which will greatly extend our knowledge of life in the ocean depths far from land and enable us to make successful attempts at generalisation.

If, however, the collection falls short of our hopes, it must still be remembered that it is really both interesting and large; the absolute number of species is very considerable, many forms are quite new, and many come from an all but unexplored field; while even of species previously known, additional facts of value have been secured regarding their distribution or their continuance as living and not mere fossil forms.

It must be obvious that the determination of old species has been, in the present instance, peculiarly difficult. The collection is a sporadic one, gathered in small quantities from the most diverse localities, requiring therefore the study of many and different geographical groups, and the consultation of many writers on these groups. In this labour I have had kind help from many friends, to whom reference will be found in the course of this Report; but I must here express my special obligation to Mr E. A. Smith, of the Molluscan Department of the British Museum, and to my friend Dr Gwyn Jeffreys, whose death a year ago is lamented by all students of the Mollusca, and by none more deeply than by myself. Still, with all help generously given, the work I have had to overtake has been one of very great difficulty, and the result is not what I designed, but what circumstances have allowed. When my very dear friend, the late Sir Wyville Thomson, asked me, in 1876, to take charge of the whole Mollusca of the Expedition, I was master of my own time, and could consult both collections and books as need arose. In 1878, however, circumstances occurred which brought back on me the full pressure of professional duty, and fixed my residence in a country district at a distance from Museums and scientific works. I at once returned the whole collection, and all my bulky but yet chaotic work to the Challenger office, seeing no possibility of completing my task. It was only at my friend's urgent request that I consented to prosecute it as I could, gladly lightening the burden by handing over to Mr E. A. Smith first the Land and Fresh Water Shells, and subsequently the Lamellibranchiata. Mr Smith's

reports on these subjects are already published. The present work has a short Appendix on the Cæcidæ, from the pen and pencil of the Marquis de Folin. The remaining groups of the Mollusca have been placed in the hands of other naturalists for description.

On one or two points of this Report it may be well that a few words should be said.

The standard of authority to which in the main all the previously known species have here been referred, and by which they have been determined, is the British Museum collection. A good deal of careful work was also done in the museums of Paris, of Geneva, and of Berne; but where the British Museum possesses specimens of the species under examination, it is to these specimens that the Challenger shells have been brought. So much I feel it needful to say, lest any one should think that determinations based on the identifications of a private museum are not very trustworthy. That my results are always right it would be vain to expect, still less that they will always be thought so. Re-examination has checked some errors, but there are doubtless others, for which I ask forgiveness beforehand. For some dislocation in the order of the figures in the plates an explanation is due. The arrangement is not all that could be wished, but in several cases specimens even in considerable numbers reached me long out of date, delayed in the hands of the naturalists engaged on other portions of the Zoological collection—a delay largely inevitable from the employment of Molluscan shells by Crustaceans and other animals as their home. The somewhat heterogeneous arrangement of the large group of the Pleurotomacea resulted from circumstances entailing protracted absence from home, and making careful supervision of that part of the work impossible.

In quoting authorities in connection with known species, I have not attempted to present a full list of synonyms, or an exhaustive catalogue of authors such as is to be looked for in the monograph of a particular group. The leading idea suggested by Sir Wyville Thomson from the first is what I have kept in view, viz., to mention synonyms where these are for any reason important, and to refer to the leading authors, British and foreign, to which any one at home or abroad would naturally turn in order to ascertain what any individual species named may be. In cases where species have been already figured, a reference to such figures has been given; in a few cases of old species where no figure has been given previously, or the figure supplied is not very accessible, a figure will be found here. On Plate XXVII. a figure has been given of *Xenophora pallidula*, Reeve, as exhibiting the very striking result in this case of the generic habit possessed by the animal of attaching foreign bodies to its shell.

It will be observed that the arrangement I have adopted is not alphabetical. That system has many advantages; but, in spite of some honourable examples of its adoption, has not found general acceptance.

The system of classification followed is, then, in the main that of the Messrs Adams, and their work on the Genera of Mollusca has been adopted simply as that substan-

tially accepted on the Continent as well as here. It is to be regretted that we have no better guide, and not much likelihood of any, so long as it is forgotten that the first requirement in any system is simplicity and obviousness. Systems founded on characteristics absent in most living shells, and in all fossil specimens, are opposed to common sense. Whatever value they may have, they are not practical.

With great hesitation I have adopted subgenera, reducing a good many accepted genera to that position. The concession is made to the belief entertained by many that subdivisions are useful.

The whole system of classification, then, which I have adopted here is not one of which I approve, but is perhaps the least objectionable I could find.

As regards general results, I cannot do better than repeat here the statements enunciated in 1880 (see Prelim. Report, p. 5, Journ. Linn. Soc. Lond., Zool., vol. xv. p. 88), which have been largely confirmed by subsequent writers:—

(1.) Depth is an important condition in connection with Molluscan life. That is to say, there really are shallow and deep water species and genera, though their bathymetric limits are not constant.

To some this may seem too self-evident and universally accepted a proposition to need statement. Such would indeed have been the case some years ago, but of late deep-sea dredgings have presented facts which have at least necessitated a revisal of many received opinions on this point. The result, it is true, has never really been doubtful, confirmed as it has further been by evidence gathered from other branches of Natural History. At the same time it is desirable to record here the witness on this matter of the Mollusca of the Challenger Expedition.

(2.) Temperature much more than mere depth seems an important condition in Molluscan life.

It is needless to speak here of other conditions, such as light, or food, or oxygen; because, though there are extreme differences in these respects, and though their influence must be very great, still their precise amount and the nature and direction of their effects are too little known to afford foundation for more than guessing.

Pressure seemed likely to form a very important condition among those which affect animal life; the enormous figures representing the square-inch amount of that pressure stirred men's imaginations, and their fancies were supported by the fact that rapid transference to the surface from even a moderate depth destroys life; but these impressions were removed by a remembrance of the laws of hydrostatic pressure, and by substituting a gradual for a rapid transference from deep water to the surface.

Temperature, however, remains as an undoubtedly important factor.

(3.) Great differences in respect of depth and temperature prove barriers to distribution, and so, by preventing the indiscriminate commingling of species, determine and preserve distinct geographical provinces.

(4.) Great length of time naturally helps escape from these barriers, for in the lapse of years accidents are likely to occur enabling species to evade difficulties which would in ordinary circumstances prove insurmountable. Hence the occurrence of a living species in a fossil state will always justify the expectation of its having a wide local distribution, and *vice versâ*.

(5.) Where barriers of depth and temperature do not check distribution there seems in ordinary circumstances no limit to universality of distribution.

(6.) There actually are existing species whose distribution is universal, no barriers having availed to stop their passage.

(7.) There still is no trace even in these oldest and most widely distributed species of essential lasting and progressive change. I do not wish to overpress this point, presenting as it does merely negative evidence. I do not assert that there are no species of Mollusca which have thus changed. I only say there are some, even many, of the oldest and most widely distributed species, which have not done so, and that so far as I have had opportunity of observation, no proof has reached me of progressive permanent and essential change in Molluscan development.

DESCRIPTION OF GENERA AND SPECIES.

Class CEPHALOPHORA, Blain., 1816.

Sub-class SCAPHOPODA, Bronn, 1862.

Order SOLENOCONCHIA,[1] Lacaze-Duthiers, 1857.

Family DENTALIACEA, Römer, 1836.

Genera. 1. *Dentalium*, Linne. 2. *Siphodentalium*, G. O. Sars. 3. *Cadulus*, Philippi.

1. *Dentalium*, Linne, 1758.

Species.

1. *Dentalium capillosum*, Jeffr.
2. *Dentalium ægeum*, Wats.
3. *Dentalium amphialum*, Wats.
4. *Dentalium keras*, Wats.
5. *Dentalium diarrhox*, Wats.
6. *Dentalium entalis*, Linne.
7. *Dentalium leptoskeles*, Wats.
8. *Dentalium circumcinctum*, Wats.
9. *Dentalium acutissimum*, Wats.
10. *Dentalium longitrorsum*, Reeve.
11. *Dentalium compressum*, Wats.
12. *Dentalium subterfissum*, Jeffr.
13. *Dentalium didymum*, Wats.
14. *Dentalium yokohamense*, Wats.
15. *Dentalium dentalis*, Linne.
16. *Dentalium javanum*, Sow.
17. *Dentalium ensiculus*, Jeffr.
18. *Dentalium tornatum*, Wats.

1. *Dentalium capillosum*, Jeffreys (Pl. I. fig. 1).

Dentalium capillosum, Jeffreys, "Valorous" Report, Proc. Roy. Soc., vol. xxv. No. 173, 1876, p. 191. No. in list 26.
" " Jeffreys, "Valorous" Moll., Ann. and Mag. Nat. Hist., 1877, ser. 4, vol. xix. p. 153.
" " Watson, "Challenger" Moll., Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 508.
" " Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1882, p. 658, No. 4, pl. xlix. fig. 1.

Station II. January 13, 1873. Lat. 38° 10′ N., long. 9° 14′ W. Setubal. 470 fathoms. Green mud.

(?) Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. W. of Azores. 1000 fathoms. Pteropod ooze. Bottom temperature, 39°·4.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. Off San Miguel, Azores. 1000 fathoms. Volcanic mud.

[1] Lacaze-Duthiers gives this only in the form of "Solénoconques," leaving others to put it into Latin for themselves: it appears accordingly as *Solenoconchia* and *Solenoconchæ*. Of these the former has been preferred here as more in analogy with the other names of orders.

Habitat.—North Atlantic. "Valorous," Station 12, 1450 fathoms; Station 13, 690 fathoms; Station 16, 1785 fathoms; in "Porcupine," in 1869, Stations 13, 16, 17, 42, 47, from 208 to 1230 fathoms; in the Bay of Mexico, Count Pourtalès' dredgings; off Bahia Honda, 418 fathoms (Jeffr.).

Dr Gwyn Jeffreys has described the ribs as "sharp (not rounded)." They rather seem to be sharply cut; but they are rounded on the top. L. 2·1 in. B. at mouth, 0·22, at apex 0·036.

The young specimen from Station 78 has at the apex on the convex curve a slit 0·1 in. long, but interrupted by two bridges of the shell which have not been removed when the fissure was made (Pl. II. fig. 1).

From Station 73 and Station 78 the specimens belong to the typical form; that from Station II., a remarkably large and fine specimen, belongs to a variety, *Dentalium capillosum*, var. *paucicostatum*, Wats., with only about 40 instead of 65 longitudinal riblets or threads, which are very flat on their top, and are divided by furrows remarkably broad and square in form. These differences strike one very strongly at first; but the transverse sculpture is identical, and there are spots on the typical specimens which present an exactly similar form of ribbing.

From Station 24 the specimen is only a fragment, and that of a young shell of very difficult determination. Count Pourtalès, however, having already found this species in the Gulf of Mexico, his authority relieves me from the responsibility of giving the West Atlantic as a locality for the species; so I content myself with adding a mark of interrogation to the "Challenger" specimen.

2. *Dentalium ægeum*,[1] Watson (Pl. I. fig. 2).

Dentalium ægeum, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 509.

Station 149G. January 29, 1874. Lat. 48° 50′ S., long. 69° 18′ E. Off London River, Kerguelen Island. 110 fathoms. Volcanic mud.

Shell.—Long, conical, finely tapering, much and very equally bent, though less, of course, as the shell grows larger, thin, pure white, porcellanous, a little chalky towards the mouth, but higher up brilliant. *Sculpture:* Longitudinal ridges 30 to 35, unequal, rounded, above close, rather high, narrow, and parted by furrows which equal the ribs, but lower down these ribs become broader and flatter and the furrows widen, till towards the mouth the surface becomes uniform, and the ridges are only indicated by the faint striæ of the furrows. Under a lens the whole surface shows a faint longitudinally striated texture. On the upper part of the shell the striæ of growth are very faint; but they become rather strongly marked towards the mouth. Towards the apex the outer layers for half an inch are stripped off, and leave exposed the brilliant smooth core, presenting many longitudinal facets corresponding with the ridges of the outer layer. There is an irregular short fissure with broken edges at the apex on the convex curve. L. 2·5 in. B. at mouth 0·3, at apex 0·33.

Than *Dentalium capillosum*, Jeffr., this is more conical, more curved, the ridges are fewer, and the furrows between much wider and more open.

[1] αἴγειος, goatish.

3. *Dentalium amphialum*,[1] Watson (Pl. I. fig. 3).

Dentalium amphialum, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 510.

Station 323. February 28, 1876. Lat. 35° 39′ S., long. 50° 47′ W. Off the mouth of the river Plate. 1900 fathoms. Blue mud. Bottom temperature 33°·1.

Animal.—Small for the shell, of a pale ruddy colour, which is deeper and browner on the foot and liver, the latter very large: two large masses of long, fine, equal captacula fill the mantle-cavity; they spring from the front of the pedestal out of which the buccal mass and the foot rise; and of these, two large bunches project through the mantle-orifice; buccal palps very small.

Shell.—Long, conical, nearly straight, what curve there is very equal throughout, of a dirty brownish-yellow, chalky on the surface, porcellanous beneath. Both specimens are very much eroded, especially on the convex curve, and show a prodigious number of layers of shell, which is, however, thin and slight. There is a short, irregular anal fissure on the convex curve. *Sculpture:* There are about 50 very slightly raised, rounded, longitudinal ridges, the furrows between which are very much like the ridges reversed, being very shallow and open. These vary a good deal at different parts of the shell, and tend to disappear towards the mouth; they are crossed by fine, close-set, sharp, but very superficial, irregular scratches, which run elliptically round the shell, advancing on the concave and retreating on the convex curve. As the shell grows, these lines of growth become harsh and broken. L. 2, nearly. B. 0·3, nearly; least B. 0·05.

This species is somewhat like *Dentalium zelandicum*, Sow., "from New Zealand," British Museum, but in form is much stumpier, the ridges are closer and the shell thinner. Than *Dentalium grande*, Desh., "Japan," British Museum, it likewise is stumpier in form; the ridges are less strong, the furrows less marked, the circular striæ less sharp: in *Dentalium amphialum* the longitudinal ridges die out, while in *Dentalium grande* they continue equally strong.

4. *Dentalium keras*,[2] Watson (Pl. I. fig. 4).

Dentalium ceras, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 510.
„ „ Dall, "Blake" Exped. Bull. Mus. Comp. Zool. Camb. Mass., vol. ix., p. 37. Station 33, 1568 fathoms.

Station 246. July 2, 1875. Lat. 36° 10′ N., long. 178° 0′ E. Mid-Pacific, E. of Japan. 2050 fathoms. Globigerina ooze. Bottom temperature 35°·1.

Station 299. Dec. 14, 1875. Lat. 33° 31′ S., long. 74° 43′ W. W. of Valparaiso. 2160 fathoms. Blue mud. Bottom temperature 35°·2.

Animal.—Mantle is white, very thin, and transparent; the adductor muscles are short and weak. The liver is small, of a light greyish-brown. The mouth of the mantle is very strong, of a yellowish colour, and the animal is rather fawn-coloured.

[1] ἀμφίαλος, sea-girt. [2] κέρας, a horn.

Shell.—Like one of the old drinking-horns, short, stumpy, and a good deal bent, rather thin; the newer growth porcellanous, the older chalky, and given to break off in flakes, leaving a perfectly smooth brilliant porcellanous core. *Sculpture:* The surface is covered with close-set annular striæ, which, especially on the longitudinal ribs, show like minute, crisp, round threads. The longitudinal ribs are very much stronger, but still are fine, rounded, parted by rounded furrows much like the ribs; both, but especially the furrows, are irregular in size, fresh riblets arising in the hollows. There are from 30 to 35 toward the apex, and from 70 to 80 toward the mouth. *Colour* pure white. *Edge* thin and broken at the mouth; at the apex there is an irregular ragged fissure in the convex curve. L. 1·8 in. B. at mouth 0·3, at apex 0·07.

One specimen from Station 246 is much less curved than the others. That from Station 299 (distant more than 7500 miles in a straight line, 4500 miles N. and S., and 6000 miles E. and W.) is much broader (L. 1·7 in., B. 0·36) and much more bent, but is obviously identical.

The distance by sea from the Pacific, off Valparaiso, to the Gulf of Mexico, is so enormous that Mr. Dall's identification of his species with this one seemed to need confirmation, and a specimen was accordingly sent to him for comparison. Mr. Dall sent me a sketch of his solitary specimen with the following remarks, which his sketch confirms, "Yours is older, has lost much tip, and widened at the mouth; the tip is perhaps slightly more curved. The sculpture in mine, perfectly preserved, is a little more cleanly cut than in yours, but otherwise identical. Mine was dead and surface not glossy, yours living (though eroded) and in places quite glossy. If the two had been dredged together I think no question would have arisen as to their being the same. From such different localities there is always more doubt, though, in these abyssal things without much reason for it. Mine has no notch, but I find such differences in this character in the same species that I put no value on it unless it is uniform in many specimens. There do not seem to be any other differences. After a most careful scrutiny, I think there are no specific or even definable varietal differences between them."

This, compared with *Dentalium amphialum*, Wats., is more curved; the longitudinal striæ are much narrower, more distinct, and more persistent. Than *Dentalium grande*, Desh., this is a much smaller and especially shorter and stumpier form, without the regular circular liræ, and the longitudinal ribs are much weaker and are closer set. Compared with *Dentalium capillosum*, Jeffr., which it superficially resembles, it differs in texture, form, and sculpture.

5. *Dentalium diarrhox*,[1] Watson (Pl. I. fig. 5).

Dentalium diarrhox, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 511.

Station 169. July 10, 1874. Lat. 37° 34′ S., long. 179° 22′ E. N.E. from New Zealand. 700 fathoms. Blue mud. Bottom temperature 40°.

Animal.—Mantle white, body pale yellow. Captacula many, fine, long, and equal, with small ovoid points. Foot and collar those of a true *Dentalium*.

[1] διαῤῥήξ, rent asunder.

Shell.—White (chalky), but porcellanous beneath the surface; rather straight, with a considerable bend near the apex; of rather rapid expansion from a very fine apex. *Sculpture:* The whole surface is faintly marked with scarcely impressed longitudinal lines of very equal interval (about 0·0055 apart); transversely it is very faintly scratched all over by very slight lines, which run elliptically round the shell. The apex has a very narrow, slightly ragged fissure, about 0·027 in. long, which lies unsymmetrically on the convex curve. L. 0·6 in., B. 0·09.

This differs from *Dentalium leptoskeles*, Wats., in being more curved and more conical. It resembles in form the young of *Dentalium lubricatum*, G. B. Sow., British Museum, "from Australia;" but in that the transverse striæ are much less oblique, and the surface is "lubricate" and polished.

6. *Dentalium entalis*, Linne.

Dentalium entalis, Linne, Syst. Nat., 12th ed., p. 1263, No. 786.
Conch. Cab. Martini., vol. i. p. 26, pl. i. fig. 1.
„ „ Lamarck, Anim. s. vert., vol. v. p. 345, and (ed. Desh.), vol. v. p. 595, sp. 13.
„ „ Wood, Ind. Test., p. 191, pl. xxxviii. fig. 6.
„ „ Deshayes, Dic. Encyclop. méthod., vol. ii. (part 2), p. 78, sp. 18.
„ „ Forbes and Hanley, Brit. Moll., vol. ii. p. 449, pl. lvii. fig. 11.
„ „ Hanley, Ipsa Linn. Conch., pp. 437 and 548.
„ „ Sowerby, Thes. Conch., part 20, vol. iii. p. 97, sp. 1, pl. ccxxv. (Generis iii.), figs. 50–52.
„ „ Gwyn Jeffreys, Brit. Conch., vol. iii. p. 191, pl. v. fig. 1, vol. v. pl. lv. fig. 1.
„ „ Searles Wood, Crag. Moll., Suppt. 1, Pal. Soc., 1871, p. 92, pl. v. fig. 20, Suppt. 2, Pal. Soc., 1873, p. 187, Addendum plate fig. 12.
„ „ Reeve, Conch. Icon., vol. xviii. pl. vi. fig. 40.
„ „ Gwyn Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1882, p. 659, sp. 8.

(1.) *Dentalium entalis*, var. *striolatum*, Stimpson.

Dentalium entalis, var. *β*, Loven, Index Moll. Scandin., p. 28, No. 215.
Entalis striolata, Stimpson, Shells of New England, Proc. Bost. Soc. Nat. Hist., vol. iv. p. 114.
Dentalium abyssorum, M. Sars, Fossile Dyrelevninger, Norge, fra Quartærperioden, p. 42, pl. iii. figs. 100–106.
Entalis striolata, Binney's Gould, Invert. Massachusetts, p. 266, fig. 528.
Dentalium abyssorum, Searles Wood, Crag. Moll., Suppt. 1, Pal. Soc., 1871, p. 93 (see vol. i. p. 189, pl. xx. fig. 2).
„ *striolatum* (*Entalis*), Gwyn Jeffreys, "Valorous" Report, Proc. Roy. Soc., 1876, vol. xxv. p. 195, No. 25.
Antalis striolata, G. O. Sars, Moll. Arct. Norv., p. 101, pl. vii. fig. 1, pl. xx. fig. 10.
Dentalium striolatum, Gwyn Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1882, p. 659, sp. 7.

Station 49. May 20, 1873. Lat. 43° 3′ N., long. 63° 39′ W. Off Halifax, North America. 85 fathoms. Stones; gravel. Bottom temperature, 35°.

(2.) *Dentalium entalis* var. *agile*, Sars.

Dentalium incertum (*nec.* Desh.), Philippi Enum. Moll. Sicil., vol. ii. p. 207, sp. 8.
„ *agile*, M. Sars, Rem. Forms, &c., Norway, &c., 1872, p. 31, pl. iii. figs. 4–15.
Antalis agilis, G. O. Sars, Moll. Arct. Norv., p. 102, pl. xx. fig. 9.
Dentalium agile, Dall, Bull. Mus. Comp. Zool., "Blake" Dredgings, Gulf of Mexico, p. 37.
„ „ Gwyn Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1882, p. 658, sp. 6.

Station VIII. February 12, 1873. Lat. 28° 3′ 15″ N., long. 17° 27′ W. Gomera, Canaries. 620 fathoms. Volcanic mud.

Station 344. April 3, 1876. Lat. 7° 54′ 20″ S., long. 14° 28′ 20″ W. Ascension Island. 420 fathoms. Volcanic sand.

(3.) *Dentalium entalis*, var. *orthrum*, Watson.

Dentalium entalis, var. *orthrum*, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. 1879, p. 512.

Station II. January 13, 1873. Lat. 38° 10′ N., long. 9° 14′ W. Setubal. 470 fathoms. Green mud.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 fathoms. Volcanic mud.

Station 145. December 27, 1873. Lat. 46° 43′ S., long. 38° 4′ 30″ E. Prince Edward Island. 140 fathoms. Volcanic sand.

Habitat.—The whole North Atlantic, from Davis Strait (Jeffr., 1750 fathoms) to the Gulf of Mexico (Dall, 1568 fathoms), and from Spitzbergen and the Færœs to the Mediterranean (Jeffr.)

Fossil.—From the European Pliocenes north and south, in one or other of the varieties.

The variety *Dentalium orthrum* is rather long and straight, and is sharply striate toward the apex, thus combining the form of *Dentalium agile* with the sculpture of *Dentalium abyssorum*.

The localities for this Dentalium are, as will be seen, remarkable; but I believe the specimens are really one species. Dr Gwyn Jeffreys having (in the Mollusca, "Lightning" and "Porcupine," *loc. cit. supra*) recanted his opinion of the unity of *Dentalium striolatum* and *Dentalium agile*, I felt bound to revise the evidence on this point before republishing the opinion I had expressed in my Preliminary Report (Journ. Linn. Soc., vol. xiv., 1879, p. 513) that they should be united. The question is a difficult one, and is complicated by the bad identification of specimens in cases where one would expect accuracy. In the end, and for my own part, I have found it impossible to separate *Dentalium abyssorum*, *Dentalium orthrum*, *Dentalium agile*, and *Dentalium striolatum* as more than varieties of *Dentalium entalis*, Linn. With that conviction, I have not thought it necessary to spend time in distinguishing the distribution of each variety in its living or fossil state; that has been pretty fully done by Dr Gwyn Jeffreys in his Mollusca of the "Lightning" and "Porcupine" Expeditions (*loc. cit. supra*).

The form *Dentalium striolatum*, as compared with *Dentalium agile*, is rather short, bent, and striate; compared with *Dentalium orthrum*, it is short, bent, and faintly striate. *Dentalium agile*, compared with *Dentalium orthrum* (which it resembles in form), is smooth, the latter being sharply striate.

In *Dentalium agile* the two lobes of the liver are equal, and the anal spatula is rather longer than usual.

7. *Dentalium leptoskeles*,[1] Watson (Pl. I. fig. 6).

Dentalium leptosceles, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 513.

Station 160. March 13, 1874. Lat. 42° 42′ S., long. 134° 10′ E. S. of Australia. 2600 fathoms. Red clay. Bottom temperature, 33°·9.

Animal.—Yellow, with a large dark patch in the region of the liver. A close little bunch of captacula round the mantle-opening.

Shell.—Very attenuated, thin, brilliant, porcellanous, with longitudinal flecks of opaque white on the translucency of the shell, chiefly toward the apex, where the shell thickens, very little bent, very slightly compressed between the convex and concave curves. *Sculpture:* There is some kind of flexuous longitudinal texture in the structure of the shell affecting the reflection from the brilliant surface, which is also closely and regularly scratched transversely by very minute, sharp, but superficial lines, which run round the shell a little elliptically. L. 1·5 in. B. 0·12, at apex 0·04.

This species in form very much resembles *Dentalium erectum*, G. B. Sow., British Museum, "from Sydney," for while some specimens of that species are more curved than this, others are even less so; but in this species the transverse striæ are very much more oblique; and in the former there is no trace of the irregular intratextural longitudinal striæ which exist here. Than *Dentalium agile*, Sars, this is a straighter and much more cylindrical, attenuated, brilliant, and delicate shell.

8. *Dentalium circumcinctum*, Watson (Pl. I. fig. 7).

Dentalium circumcinctum, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 513.

Station II. January 13, 1873. Lat. 38° 10′ N., long. 9° 14′ W. Setubal. 470 fathoms. Green mud.

Station 23. March 15, 1873. Lat. 18° 24′ N., long. 63° 28′ W. Sombrero Island, West Indies. 450 fathoms. Pteropod ooze.

Station 56. May 29, 1873. Lat. 32° 8′ 45″ N., long. 64° 59′ 35″ W. Off Bermuda. 1075 fathoms. Coral mud. Bottom temperature, 38°·2.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Pernambuco. 350 fathoms. Red mud.

[1] λεπτοσκελής, attenuated.

Shell.—Very long and narrow, very slightly bent, and that almost entirely above; a very little flattened on the concave curve, so as to be slightly trigonal; white, opaquely porcellanous, a little glossy, not thick but strong. *Sculpture:* Closely and regularly girt round elliptically with scratch-like puckerings in the lines of growth, of which there are about 55 in the $\frac{1}{10}$th of an inch. Longitudinally striped with fine ribs, of which there are from 17 to 20, sharp and well defined by still broader furrows toward the apex, but down the shell these increase in number and steadily decrease in definiteness till they only show as a feeble system of lines on the rounded surface. At the apex there is on the convex curve a ragged irregular fissure about 0·1 in. long. L. 1·93 in. B. at mouth 0·13, at apex 0·02.

As compared with *Dentalium semipolitum*, Sow., this is a longer, straighter, more attenuated shell, with striæ stronger, blunter, and more persistent. It is not unlike *Dentalium antillarum*, D'Orb., in texture and in size, but is much straighter and narrower, and the early ribs are much finer and fewer. It is intermediate in form between *Dentalium erectum*, G. B. Sow., and *Dentalium splendidum*, Desh., a little stumpier and more curved than the first, and less so than the second; it is much more longitudinally ribbed and less polished than either. Than *Dentalium lessoni*, Desh., it is much more attenuated, and never so strongly ribbed longitudinally. Than *Dentalium inversum*, Desh., it is more strongly and persistently striate longitudinally.

The young shell is perplexingly like that of *Dentalium entalis*, var. *orthrum*, Wats., but is a little straighter, broadens more slowly, and the ribs project more sharply. In maturer specimens this species is obviously much more attenuated than the former.

9. *Dentalium acutissimum*, Watson (Pl. I. fig. 8).

Dentalium acutissimum, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 514.

Station 218. March 1, 1875. Lat. 2° 33′ S., long. 144° 4′ E. N. of Papua. 1070 fathoms. Blue mud. Bottom temperature, 36°·4.

Station 246. July 2, 1875. Lat. 36° 10′ N., long. 178° 0′ E. Mid-Pacific, E. of Japan. 2050 fathoms. Globigerina ooze. Bottom temperature, 35°·1.

Shell.—Long and much attenuated, rather straight, and very regularly curved, very thin, brilliant, and glassy. *Sculpture:* The surface is crossed by fine sharpish irregular striæ, which run very elliptically round. In the young shell the surface is regularly and finely scratched by a great number of close-set, regular, sharp, and extremely minute lines, which very gradually become more and more faint, but are still traceable even in the full-grown shell. The *colour* is pure white, transparent, and almost hyaline in the fresh shell, but in the dead shell the interior (not, as usual, the exterior) layers of the shell become opaque and chalky. The *edge* is very thin and irregularly broken. At the *apex* the end is abruptly broken off in one specimen, in the other there is an irregular fissure with an internal lining process. In the specimen from Station 246, which is full-grown, but very short, a large, thin, irregularly shaped process projects, which being obliquely

cut off somewhat across the shell, supplies the anal orifice. L. 1·52 in., of young specimens from Station 218; B. at mouth 0·12, at apex 0·026. L. 1·14, of old and broken specimen, Station 246; B. at mouth 0·23, at apex 0·14.

Compared with *Dentalium leptoskeles*, Wats., this is more curved, more conical, and thus not nearly so attenuated. Compared with *Dentalium agile*, Sars, also, this is more curved, rather more conical, and very much more delicate. It is likewise, when full-grown, apparently larger than either. Than *Dentalium lubricatum*, G. B. Sow., this broadens more rapidly, is more brilliant, the circular striæ are stronger, the longitudinal are finer, closer, and sharper. It is also straighter than that species. Than *Dentalium pretiosum*, Nuttall, this broadens faster and is much more brilliant. *Dentalium perlongum*, Dall, lacks the faint longitudinal striæ; is much straighter, and is more slender: thus if one chooses a point where the breadth in the two species is equal, then within about an inch *Dentalium perlongum*, Dall, is not so much as two-thirds of the breadth of *Dentalium acutissimum*. Contrary to Mr. Dall's statement, however, the two species agree in having the anal fissure on the *convex* side.

In reference to the form of the apex, it may be observed that the separation of the *Dentalia* by the absence (*Dentalium*) or presence (*Entalis*) of the cleft process cannot be maintained. In *Dentalium abyssorum*, Sars, there are some with a fissured process, some with a fissure without any process, some with neither fissure nor process. There are cases in which the fissure is very regularly formed, in others it looks as if it had been gnawed, in others it resembles a break; sometimes it is on the convex curve, as is the general case, sometimes on the concave, as in *Dentalium inversum*, Desh., and in *Dentalium subterfissum*, Jeffr.; sometimes it is irregularly lateral, as occasionally in *Dentalium agile*, Sars.

10. *Dentalium longitrorsum*, Reeve.

Dentalium longitrorsum, Reeve, Conch. Syst.
„ „ Reeve, Conch. Icon., vol. xviii. pl. ii. fig. 9.
„ „ Sowerby, Thes. Conch., part 20, vol. iii. p. 98, sp. 10., pl. ccxxv. (*Generis* iii.), fig. 59, 60.

Station 189. September 11, 1874. Lat. 9° 36′ S., long. 137° 50′ E. West of Cape York, S.W. of Papua. 25 fathoms. Green mud.

Habitat.—(British Museum) Zanzibar and China.

In Reeve's Conchologia Iconica this species is given as = *Dentalium politum*, Desh. (*nec* Linn.), and = *Dentalium lamarckii*, Chenu.

11. *Dentalium compressum*, Watson (Pl. I. fig. 9).

Dentalium compressum, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv., 1879, p. 516.
„ „ Dall, "Blake" Exped. Prelim. Report, Bull. Mus. Comp. Zool. Camb. Mass., vol. ix. (1880), p. 38.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. N. of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Compressed between its concave and convex curves to the extent of 0·016 in.; bent, as in young shells, a little more towards the apex, and the curve greater on the convex slope, slightly carinated on each side. *Sculpture*: Faint, but very regular; longitudinal striæ, about 0·01 in. apart, apparently in the texture of the shell, which thus seems to be built up of minute, square-faced rods laid side by side. Crossing these at right angles are sharp, irregular scratches in the line of growth, nearly circular, but bent a little forwards on the concave curve. L. 0·45 in. B. at mouth 0·05 (least), 0·06 (greatest); at apex 0·019.

In my Prelim. Report (*loc. cit.*) I said that it was very possible that this might be a *Siphodentalium*, as Mr Gwyn Jeffreys suggested; but that in the absence of the animal and the rubbed condition of both ends of the shell, it was impossible to say. Mr Dall (*loc. cit.*) seems to have been able from his material to settle this point, for he speaks positively on the matter, and says it is not a *Siphodentalium*. It resembles *Siphodentalium tetragonum*, Brocchi, more than any other; but the want of the angles, the different character of the longitudinal striæ, and, above all, the compression, separate it completely. There is only one dead, discoloured, and somewhat rubbed specimen.

12. *Dentalium subterfissum*, Jeffreys (Pl. I. fig. 10).

Dentalium subterfissum, Jeffreys, "Valorous" Moll., Ann. and Mag. Nat. Hist. ser. 4, vol. xix., 1877, p. 154.
Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1882, p. 660, pl. xlix. fig. 3.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. Azores. 1000 fathoms. Volcanic mud.

Station 85. July 19, 1873. Lat. 28° 42′ N., long. 18° 6′ W. Palma, Canaries. 1125 fathoms. Volcanic mud.

Station 120. September 9, 1873. Lat. 8° 37′ S., long. 34° 28′ W. Pernambuco, South America. 675 fathoms. Red mud.

Habitat.—Davis Strait. 1785 fathoms. North Atlantic; various Stations off the West Coast of Ireland. 1180 to 1476 fathoms (Jeffr.)

This species, like *Dentalium inversum*, Desh., is peculiar, as having the apical slit on the concave curve. The animal is unknown.

13. *Dentalium didymum*,[1] Watson (Pl. I. fig. 11).

Dentalium didymum, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. 1879, p. 517.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. N. of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

[1] δίδυμος, as *two*-sided. Also from St Thomas; also as doubtful.

Shell.—Extremely attenuated, very slightly curved, a little flattened laterally, and that chiefly toward the convex curve, so that the form is slightly trigonal, porcellanous, pure white, brilliant. *Sculpture:* Very fine; irregular scratches run round the shell, the surface of which is not perfectly uniform; there are very faint indications of longitudinal texture, and there is in the substance of the shell a certain transverse flocculence. Towards the mouth the shell is extremely thin as usual; but towards the apex it becomes thick from the smallness of the bore, which lies not in the centre, but nearer the convex curve of the shell. L. 1·08 in. B. 0·6; at apex 0·04.

This measurement is taken from the largest of six fragments, none of which preserve the apex of the shell.

14. *Dentalium yokohamense*, Watson (Pl. II. fig. 1).

Dentalium yokohamense, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 517.

Station 233. May 17, 1875. Lat. 34° 39′ N., long. 135° 14′ E. Yokohama, Japan. 8 fathoms. Mud.

Shell.—Much curved when young, becoming nearly straight with later growth, little conical, rather strong, opaque, yellowish white, quite dull, but not chalky. *Sculpture:* Irregular, slightly elliptical, lines of growth, a little puckered, generally slight, but sometimes sharp and even; towards the mouth faintly imbricated; occasionally marked by a deep furrow-like constriction of the shell. The *longitudinal ribs* are eight to nine in number, equal, rounded, rather strong, but not very prominent. These are parted by furrows, round and open, very shallow, and of very unequal breadth. In these furrows, one, two, or even three thread-like riblets appear, and in the whole texture the lens shows a tendency to a longitudinal or rod-like structure. At the apex the shell is squarely truncate, and in the young shell there is, on the convex slope, a slight ragged fissure. L. 1·2 in. B. at mouth 0·15; at apex 0·003.

The ribs here are much less sharp than they are in *Dentalium dentalis*, Linn., and there is no trace of the exquisite longitudinal fretted striæ which cover the furrows in that species. The sharp intercostal striæ of *Dentalium octogonum* are quite absent here; and in that species, which is much more bent, the ribs are much wider apart and more equally parted.

15. *Dentalium dentalis*, Linne.

Dentalium dentalis, Linne, Syst. Nat., p. 1263, No. 785.
" " Lamarck, Anim. s. vert., vol. v. p. 344, and (ed. Desh.) vol. v. p. 595, sp. 10.
" " Deshayes, Mem. soc. hist. nat., vol. ii. p. 353, pl. xvi. fig. 9, 10, sep. imp., p. 33, pl. ii. fig. 9, 10.
" " Deshayes, Encyclop. méthod., vers. vol. ii. (part 2), p. 75, sp. 8.
" " Wood, Ind. Test., p. 191, pl. xxxviii. fig. 5.
" " Hanley, Ipsa Linn. Conch., pp. 436, 548.

Dentalium dentalis, Philippi, Enum. Moll. Sicil., vol. i. p. 243, vol. ii. p. 206, sp. 1, p. 207, sp. 3.
Dentalium costatum, Wood, Crag. Moll., Pal. Soc., vol. i. p. 188, pl. xx. fig. 1.
Dentalium dentalis, Sowerby, Thes. Conch., pt. 20, vol. iii. p. 101, pl. ccxxiv. (*Generis* ii.), fig. 14.
„ „ Weinkauff, Conch. Mittelm., vol. ii. p. 419, sp. 2.
„ „ Monterosato, Enumeraz., p. 16.
„ „ Reeve, Conch. Icon., vol. xviii. pl. iv. fig. 21.
„ „ Seguenza, Form. Terz. Calabria, pp. 117, 357.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 fathoms. Volcanic mud.

Simon's Bay, Cape of Good Hope. December 1873. Sand and shells. 15 to 20 fathoms.

Habitat.—Living in the Mediterranean, the S.W. of France, and the Canaries, but not Madeira.

Fossil.—From the Upper Miocene onwards (Seg.)

Dr Gwyn Jeffreys was good enough to examine these specimens for me, their state and the newness of the locality making confirmation specially desirable.

16. *Dentalium javanum*, Sowerby.

Dentalium javanum, Sowerby, Thes. Conch., pt. 20, vol. iii. p. 102, sp. 39, pl. ccxxiii. (*Generis* i.) fig. 12.
„ „ Reeve, Conch. Icon., vol. xviii. pl. iii. fig. 14.

September 7, 1874. Torres Strait, Cape York. 3–11 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. W. of Cape York, Australia, S. of Papua. 28 fathoms. Green mud.

Habitat.—Malacca (British Museum).

Dentalium octogonum, Linn. (which this much resembles) has much stronger intracostal striæ, and the ribs are much more sharply prominent.

17. *Dentalium ensiculus*, Jeffreys (Pl. II. fig. 2).

Dentalium ensiculus, J. Gwyn Jeffreys, "Valorous" Moll., Ann. and Mag. Nat. Hist., ser. 4, 1877, vol. xix. p. 154.
„ „ J. Gwyn Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc., 1882, p. 660, pl. xlix. fig. 4.

Station 23. March 15, 1873. Lat. 18° 24′ N., long. 63° 28′ W. Off Sombrero Island, West Indies. 450 fathoms. Pteropod ooze.

Habitat.—North Atlantic, 1450 to 1785 fathoms; West of Ireland, 1366 fathoms; Bay of Biscay, 862 fathoms; Portugal, 740–1095 fathoms (Jeffr.)

The bore of the shell lies quite on the convex side, and toward the apex is disproportionately small.

18. *Dentalium tornatum*,[1] Watson (Pl. II. fig. 3).

Dentalium tornatum, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 518.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Shell.—Small, narrow, very finely tapering, slightly but very equably bent, strong, of a quill-like translucency and brilliance. *Sculpture:* The upper part of the shell is encircled by deep, close-set, slightly oblique grooves, which look as if they were turned in a lathe. Farther down the shell they become shallower, and cease at last rather abruptly. The flat bands of the shell-surface which part them are of variable width, and increase with the growth of the shell from about 0·011 in. to twice that amount. The front part of the shell is closely, minutely, obliquely striated in the line of growth, with here and there a very faint depression, just suggestive of the grooves above. There is besides these a faint transverse flocculence in the substance of the shell. *Mouth-edge* thin, not contracted, very slightly oblique. The *apex* is abruptly broken across, and there the edge of the shell is thick, and from the opening there projects a minute round pipe about 0·008 broad, and 0·012 long, slightly striated obliquely, abruptly broken off at the end. In most of the specimens only the mere stump of this delicate tube remains. L. 0·55 in. B. 0·038; apex 0·018.

This species seems to vary a little in breadth.

2. *Siphodentalium*,[2] G. O. Sars. 1859.

Species.

1. *Siphodentalium platamodes*, Wats.
2. *Siphodentalium tytthum*, Wats.
3. *Siphodentalium pusillum*, Wats.
4. *Siphodentalium dichelum*, Wats.
5. *Siphodentalium tetraschistum*, Wats.
6. *Siphodentalium prionotum*, Wats.
7. *Siphodentalium eboracense*, Wats.
8. *Siphodentalium honoluluense*, Wats.

1. *Siphodentalium platamodes*,[3] Watson (Pl. II. fig. 4).

Siphodentalium platamodes, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 519.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. N. of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Small, solid, finely tapered, curved, especially toward the apex, five-sided, with four sharp corners, which are nearly right angles, and one very obtuse angle along the concave curve; these all tend to disappear toward the apex, the young shell being

[1] Turned as in a lathe.

[2] Sars published this name in the form of *Siphonodentalium*, a "linked sweetness long drawn out."

[3] πλαταμώδης, flat-shaped.

rounded. *Sculpture:* The angles of the shell project more or less in a sharp rounded rib, which is sometimes double; there are a few longitudinal striæ, regular, 0·01 in. apart, strongest near the angles, more or less obsolete as they recede from these. Neither end is fresh enough for description. L. 0·47 in. B. 0·049.

I have hesitatated a good deal in separating this from *Siphodentalium tetragonum*, Broc. = *quinquangulare*, E. For., with which it agrees more closely than with *Siphodentalium pentagonum*, Sars. Here, however, the longitudinal ribs are much closer, as well as much more obsolete; the shell is more curved throughout its whole length, is more attenuated, and retains its square form and sharp angles instead of becoming rounded as in *Siphodentalium tetragonum*, Brocchi. Amidst all the variations of that very variable form I have not seen any that connects it with this species.

2. *Siphodentalium tytthum*,[1] Watson (Pl. II. fig. 5).

Siphodentalium tytthum, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 520.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. N. of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Minute, very conical, *i.e.*, broadening rapidly, much bent, very thin, but not hyaline, apparently horny when living, and becoming opaque when dead, and then also glossy but not brilliant. *Sculpture:* Some very faint traces of circular striæ on the lines of growth. *Mouth-edge* very thin and chipped. *Apex* broken, but in one specimen showing the two lateral clefts common in the genus. L. 0·22 in. B. at mouth 0·049; at apex 0·013.

In texture and in general form this is like *Siphodentalium vitreum*, Sars, but it broadens much faster and is more curved.

3. *Siphodentalium pusillum*, Watson (Pl. II. fig. 6).

Siphodentalium pusillum, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 520.

Station 85. July 19, 1873. Lat. 28° 42′ N., long. 18° 6′ W. Palma, Canaries. 1125 fathoms. Volcanic mud.

Shell.—Minute, attenuated, slightly bent, thin, transparent, irregularly banded with opaque white, which runs elliptically round the shell. *Sculpture:* There is no trace of longitudinal striæ, but the whole surface is sharply scratched with minute transverse striæ, which run (as usual) not directly round the shell, but advance on the concave and retreat on the convex curve. L. 0·12 in. B. at small end 0·01; at broad end 0·02.

[1] τυτθός, small.

The specimens are young, and both ends are chipped.

It is straighter and more tumid than *Siphodentalium minutum*, H. Ad. (Gulf of Suez, MacAndrew), and not contracted at the mouth. It is also straighter and more tumid than *Dentalium filum*, Sow. (in part), = *Dentalium gracile*, Jeffr., Journ. de Conch., 1872, p. 140, pl. v. fig. 5, but more curved and broader than the young of *Dentalium capillosum*, Jeffr. It is much larger, more tumid, and straighter for the same length than *Siphodentalium lofotense*, Sars.

4. *Siphodentalium dichelum*,[1] Watson (Pl. II. fig. 7).

Siphodentalium dichelum, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 521.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Shell.—Long, slightly swollen at about three-fifths of its length; the swelling bulges on the concave curve, but the convex curve is uninterrupted; between these two curves it is compressed by one-sixth of its breadth, a little contracted in front, bent and attenuated toward the apex; thin, brilliant white, almost hyaline, with a few minute, transverse, curdy streaks, but weathering to opaque. There is an opaque band round the apex. *Sculpture:* Most faint and delicate microscopic scratches on the lines of growth, with a minute transverse flocculence and some vague indication of longitudinal texture in the substance of the shell. The *mouth* is large, very oblique, with a smoothly rounded edge, which is sharp on the inner margin; both it and the posterior opening are oval. The *apex*, which is small, is split on either side by a deep, narrow, slightly widening, smooth, clean-cut, but not perfectly regular cleft, which is evidently carried down the shell as the growth of the animal demands, for it cuts across the transverse striæ, as Mr Searles Wood remarks is the case with *Siphodentalium* (*Dischides*) *bifissum*. Within the opening a short, minute, longitudinal, rib-like process projects along the middle of the posterior (*i.e.*, convex curve) wall; a little farther in, a thin, narrow, circular callus runs round the opening. L. 0.35 in. B. at mouth 0·032; broadest 0·055; apex 0·022.

This is much larger than *Siphodentalium tetraschistum*, Wats., and much less cylindrical, being much more contracted towards the mouth. The posterior internal rib is a curious feature. It shows *through* the shell like a crack or depression, but is a true internal rib.

5. *Siphodentalium tetraschistum*,[2] Watson (Pl. II. fig. 8).

Siphodentalium tetraschistum, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 521.

Station 113A. September 1, 1873. Lat. 3° 47′ S., long. 32° 24′ 30″ W. Anchorage off Fernando Noronha. 25 fathoms. Volcanic sand and gravel.

Shell.—Cylindrical, tapering, bent and attenuated from about the middle to the apex; toward the mouth very slightly contracted. It is rather strong, and has the dull gloss

[1] δίχηλος, cloven. [2] τετράσχιστος, split into four.

and white translucency of a quill. There are two opaque bands round the apex. *Sculpture:* There are traces, exceedingly faint, of fine close-set striæ, which run elliptically round the shell on the lines of growth, and in some lights there is just a reflection as of some sort of remote longitudinal texture (very like that in *Siphodentalium* (*Dischides*) *bifissum*, Wood). The *edge* of the mouth slopes backwards very obliquely from the concave to the convex side of the shell; it is thick, and all round it is smoothly rounded off. The *apex* projects on the convex side of the shell, and is split by four opposite, shallow, unequal, irregular, rough-edged, gaping clefts, so arranged as to leave the teeth at the convex and concave curves and at the two sides. The bands round the apex are two narrow callus-like internal ribs. L. 0·298 in. B. at mouth 0·03; at broadest 0·035; at apex 0·017.

This species approaches nearest to *Siphodentalium* (*Dischides*) *bifissum*, Wood, but that species has only two, and these lateral, narrow, deep, and regular, posterior clefts; its mouth is squarely cut off with a thin and jagged edge; its shell is very little contracted at the mouth, and contracts slowly but constantly all the way to the apex; is also longer, more bent, and thinner. *Siphodentalium lofotense*, Sars, and *Siphodentalium vitreum*, Sars, which have the four posterior clefts, are totally unlike in texture and in form.

6. *Siphodentalium prionotum*,[1] Watson (Pl. II. fig. 9).

Siphodentalium prionotum, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 522.

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Raine Island, Cape York, N.E. Australia. 155 fathoms. Coral sand.

Shell.—Long, narrow, tapering, gently contracted at the mouth, slightly bent throughout; rather strong, polished, but hardly brilliant, translucent white. *Sculpture:* Very faintly transversely striated on the surface, and a very minute flocculence in the same direction in the texture. For the breadth of the shell the *mouth* is large, perfectly round, oblique, with a smoothly rounded edge, which is sharp on its inner margin. The *apex* is small, much chipped, but that in such a way as in all the specimens to produce a shallow rounded hollow on either side, with a sharp projecting point before and behind. Within the opening a short excessively minute riblet runs out along the middle of the posterior wall; it shines through the shell like a depression, being a little more transparent than the shell-wall. L. 0·328 in. B. at mouth 0·028; greatest 0·039; at apex 0·013.

This species differs from the previous in being much narrower and having no swelling. From *Siphodentalium tetraschistum*, Wats., it differs in being more elongated, more attenuated behind, and in the character of the posterior opening.

[1] πριονωτός, jagged.

7. *Siphodentalium eboracense*, Watson (Pl. II. fig. 10).

Siphodentalium eboracense, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 523.

September, 7, 1874. Torres Strait, Cape York, N.E. Australia. 3–11 fathoms.

Shell.—Small, narrow, tapering very gradually throughout, toward the apex bent, thin, brilliant, translucent and transparent in alternate bands. *Sculpture:* There are a few remote, irregular, oblique, transverse striæ; in the young shell the whole surface is covered with longitudinal striæ, excessively minute (0·0005 in. apart), sharp and regular, but which seem very easily rubbed off,[1] and which disappear towards the mouth. The *mouth* is round, very oblique, sharp, and thin. The *apex* is minute, and is broken straight across and somewhat chipped. L. 0·185 in. B. 0·024; at apex, 0·008.

Than *Siphodentalium prionotum*, Wats., this is smaller, straighter, but toward the apex more bent, not narrowed at the mouth; smaller at the apex, and the whole texture of the shell is different.

Than *Siphodentalium vitreum*, Sars, this is less cylindrical, is not contracted toward the mouth, and is much smaller toward the apex.

8. *Siphodentalium honoluluense*, Watson (Pl. II. fig. 11).

Siphodentalium honoluluense, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 89.

July 1875. Reefs off Honolulu. 40 fathoms.

Shell.—Cylindrical, bent and attenuated from about the middle to the apex, toward the mouth very slightly contracted; of a dull white translucency, and not glossy. *Sculpture:* The surface, especially toward the apex, is faintly marked by microscopic, remote, oblique, raised, encircling rings, parallel to which there are fine scratches in the intervals. *Edge* of the mouth very oblique, blunt. *Apex* not small, broken. Length 0·21; breadth, greatest 0·031; at mouth 0·028; at apex 0·016.

This species closely resembles *Siphodentalium tetraschistum*, Wats.; but, besides the obvious difference in size, that species is a little more cylindrical and is much more strongly and uniformly sculptured. I say nothing of the peculiar feature of the apex of that species, because, the point being broken in the solitary specimen of the present species, comparison is impossible.

[1] On two specimens they are barely traceable.

3. *Cadulus*, Philippi, 1844.

Species.

1. *Cadulus colubridens*, Wats.
2. *Cadulus vulpidens*, Wats.
3. *Cadulus rastridens*, Wats.
4. *Cadulus sauridens*, Wats.
5. *Cadulus gracilis*, Jeffr.
6. *Cadulus simillimus*, Wats.
7. *Cadulus curtus*, Wats.
7a. *Cadulus curtus*, var. *congruens*, Wats.
8. *Cadulus obesus*, Wats.
9. *Cadulus tumidosus*, Jeffr.
10. *Cadulus exiguus*, Wats.
11. *Cadulus ampullaceus*, Wats.

1. *Cadulus colubridens*, Watson (Pl. III. fig. 1).

Cadulus colubridens, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 523.

Station 169. July 10, 1874. Lat. 37° 34′ S., long. 179° 22′ E. N.E. point of New Zealand. 700 fathoms. Blue mud. Bottom temperature, 40°.

Shell.—Like an adder's fang; long, sharp, bent, very slightly flattened, swollen near the broader end. The swell, which is faintly angulated and is at one-fourth of the length, is chiefly on the convex curve, but is visible on the concave curve too. From the angulation, the curve is very equable in either direction till about two-thirds along toward the apex, where it bends a little more. The shell is thin, brilliant, semi-opaque, white. *Sculpture:* Very faint and fine scratches on the lines of growth. *Mouth* large, oval, very slightly flattened on the ventral side, from which the thin sharp edge is obliquely cut off upwards towards the convex curve. The *posterior opening* is much smaller, nearly round, and the edge is thin and chipped. L. 0·58 in. B. at mouth 0·067; greatest 0·1; at apex, 0·033.

This is twice the size of *Cadulus gadus*, Montague; but it resembles that in the angulation, which, however, is here more marked at the summit of the swelling; its expansion from the smaller end is much more gradual, and its contraction from the angulation to the mouth is more rapid.

2. *Cadulus vulpidens*, Watson (Pl. III. fig. 2).

Cadulus vulpidens, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 524.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Like the canine tooth of a small Carnivore; long, sharp, bent, swollen (a little obliquely) toward the mouth. The swelling is greatest on the convex curve, and lies there a little nearer the end (about one-fourth of the length) than it does on the concave, where it is at about one-third of the length. This obliquity makes the form a little unsymmetrical. From the swelling the shell contracts more rapidly towards the mouth.

Toward the apex the bend increases, and the end of the shell is a very little contracted. The shell is pretty strong, brilliant, opaquish white. *Sculpture:* Very minute, but sharp, microscopic scratches on the lines of growth. *Mouth* small, round, obliquely truncated backward toward the convex curve. *Edge* thin and sharp. *Posterior opening* round; the edge thick, flat, slightly gnawed and broken, projecting a little on the convex curved side. L. 0·35 in. B. at mouth 0·039; at swelling 0·069; at apex 0·03.

This is smaller and less symmetrical than *Cadulus colubridens*, and the mouth is much smaller. Than *Dentalium clavatum*, Gould, which it much resembles, this is more contracted in front and less so behind, and has more of angulation in its tumidity. Than *Cadulus gadus*, Mont., this is a much less stumpy shell, being less swollen in the middle, and more drawn out before and behind; it is also straighter. *Cadulus ventricosus*, Bronn, has the swelling nearer the mouth.

3. *Cadulus rastridens*, Watson (Pl. III. fig. 3).

Cadulus rastridens, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 525.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Like the tooth of a rake, small, narrow, bent, swollen, and on the convex curve very faintly angulated at about five-eighths of its length, from which point both the bend and the narrowing of the shell is greater (proportionately) toward the mouth than it is toward the apex. Between the back and the belly there is a very slight compression of the shell. It is pretty strong, brilliant, more or less obscurely banded transversely, with alternate equal threads of opaque and transparent white. *Sculpture:* Very faint, superficial, transverse scratches. *Mouth* pretty large, not at all oblique, thin, sharp, and chipped; *posterior opening* round, straight; edge thickened, and less chipped than the mouth. L. 0·119 in. B. at mouth 0·015; at swelling 0·023; at apex 0·01.

4. *Cadulus sauridens*, Watson (Pl. III. fig. 4).

Cadulus sauridens, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 525.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Long, narrow, scarcely bent, swollen very slightly near the middle of the convex curve, just perceptibly and a little more anteriorly on the concave; both the bend and the contraction are greater towards the apex than towards the mouth. There is a

very slight compression between the back and the belly of the shell. It is thin, brilliant, scarcely opaque, white. *Sculpture:* There is none, except perhaps some very faint microscopic traces of longitudinal texture. *Mouth* rather small, very oblique; edge thin, but not chipped. *Apical opening* small, straight across the shell, thin, chipped. L. 0·12 in. B. at mouth 0·01; at swelling 0·02; at apex 0·009.

This differs from *Cadulus rastridens*, Wats., in being less bent, less swollen, the swelling more central, more apparent on the convex curve; the shell is less attenuated posteriorly, and more so anteriorly; there is no transverse sculpture; the mouth here is oblique, the shell at the anal opening is not thickened, and both ends are narrower. Than *Cadulus gracilis*, Jeffr., this is much smaller, more attenuated, has a gibbous swelling, and not a mere equable enlargement, and has both openings much smaller.

From *Cadulus jeffreysi*, Monter., it differs still more strongly in these very respects, except that in size it is nearer.

Dall ("Blake" Expedition, Bull. Mus. Comp. Zool. Camb. Mass., 1880, p. 36) quotes this species from three stations in the Gulf of Mexico; but from examination of a specimen of his species, which he kindly forwarded to me, I am able to say with confidence that it is not *Cadulus sauridens*.

5. *Cadulus gracilis*, Jeffreys (Pl. III. fig. 5).

Cadulus gracilis, J. Gwyn Jeffreys, "Valorous" Moll., Ann. and Mag. Nat. Hist., ser. 4, vol. xix., 1877, p. 157.

" " J. Gwyn Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1882, p. 664, sp. 3, pl. xlix., fig. 7.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. 450 fathoms. Volcanic mud.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. Off San Miguel, Azores. 1000 fathoms. Volcanic mud.

Station 85. July 19, 1873. Lat. 28° 42′ N., long. 18° 6′ W. Canaries. 1125 fathoms. Volcanic mud.

Dr Jeffreys got one specimen in the "Valorous" at Station 13, 690 fathoms. He was good enough to verify my determination of this species. It is very like *Cadulus jeffreysi*, Monter., but is larger and a little compressed (in the proportion of $\frac{1}{15}$) between the convex and concave curves as compared to its breadth, which is not the case in *Cadulus jeffreysi*. It is not so swollen, and the posterior opening is larger than in that species.

6. *Cadulus simillimus*, Watson (Pl. III. fig. 6).

Cadulus simillimus, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 526.

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Raine Island, Cape York, N.E. Australia. 155 fathoms. Coral sand.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. West of Cape York. 6 fathoms. Coral mud.

Shell.—Very like *Cadulus gracilis*, Jeffr.; rather broad, narrowed at both ends, very slightly and symmetrically bent, but a little more towards the mouth, with a very slight bulge, which just shows on the concave curve. It is thin, polished, translucent (weathering opaque), with an opaque ring near the apex. *Sculpture:* Very minute and faint superficial oblique striæ, with a faint flocculence in the substance of the shell. *Mouth* rather large, oblique; edge thin, but rounded. *Apical opening* small, thin, and chipped. L. 0·16 in. B. at mouth 0·02; greatest 0·036; at apex 0·014.

This differs from *Cadulus gracilis*, Jeffr., in being broader, with a slight bulge on the concave curve, in being a little more bent, and in not being compressed. It is also larger. It is extremely like *Cadulus jeffreysi*, Monter., but is a little more bent, especially in front, is larger, and seems a thinner shell.

7. *Cadulus curtus*, Watson (Pl. III. fig. 7).

Cadulus curtus, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 527.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Short, broad, narrowed at both ends, scarcely bent, and that almost wholly near the mouth; swollen in the middle, so as to bulge a little on the concave curve. Though the mouth is larger than the apex, the whole shell is a little more pinched in in front than behind, and is very slightly laterally compressed (in the proportion of about 14 to 15). It is thin, polished, translucent white, with one, sometimes two, opaque rings near the apex. *Sculpture:* Only under a high power of the microscope can some very close transverse striæ be seen in the texture of the shell. *Mouth* rather large, very slightly oblique; edge thin and generally much chipped. *Apical opening* small, straight, chipped. The opaque rings result from thickening, caused by a thin projection which narrows the opening. L. 0·1 in. B. at mouth 0·019; greatest 0·03; apex 0·012.

Than *Cadulus curtus*, var. *congruens*, Wats., this is not only very much smaller, but here the mouth is oblique, and the shell straighter behind and more bent in front, where, too, it is more pinched in. It is nearly of the same length as *Cadulus obesus*, Wats., but is very much narrower.

7A. *Cadulus curtus*, var. *congruens*, Watson (Pl. III. fig. 7a).

Cadulus curtus, var. *congruens*, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 527.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

This differs from *Cadulus curtus*, Wats., in being one-third larger; the mouth is perhaps less oblique, but being in both specimens much chipped, this may be accidental. The most remarkable feature of difference is that it is perfectly round, and not, like the other, laterally compressed. I attribute this difference to age. At all events, in the absence of a larger series of specimens, I believe it safer to include both under one species.

8. *Cadulus obesus*, Watson (Pl. III. fig. 8).

Cadulus obesus, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 527.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Short, very broad, narrowed at both ends, little bent, and that almost entirely toward the mouth, very much swollen in the middle, and bulging a good deal on the concave curve, a little more attenuated behind, and very slightly laterally compressed (in the proportion of 14 to a little less than 15). It is pretty strong, polished, translucent white, with one, sometimes two opaque rings near the apex. *Sculpture:* A few very vague and faint, distant, transverse lines. *Mouth* rather large, straight; edge thin and much chipped. *Apical opening* small, straight, chipped, narrowed inside by a minute shelf-like projecting ring. L. 0·109 in. B. at mouth 0·02; greatest 0·04; at apex 0·01.

This is nearly of the same proportions as *Cadulus curtus*, except being very much broader; like that, too, it is narrowed laterally. I have hesitated very much in making it more than a variety; but, on the whole, think it safer to reckon it as distinct. One specimen has its breadth exaggerated by a gibbous pad of enamel.

9. *Cadulus tumidosus*, Jeffreys (Pl. III. fig. 9).

Cadulus tumidosus, Jeffreys, "Valorous" Moll., Ann. and Mag. Nat. Hist., 1877, ser. 4, vol. xix. p. 156.

" " Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1882, p. 665, sp. 7; pl. xlix. fig. 8.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. Azores. 1000 fathoms. Volcanic mud.

Station 85. July, 19, 1873. Lat. 28° 42′ N., long. 18° 6′ W. Canaries. 1125 fathoms. Volcanic mud.

Habitat.—N. Atlantic, "Valorous," Station 12, 1450 fathoms. In the "Porcupine" Channel slope, 557 fathoms; Bay of Biscay, 292–1095 fathoms. "Josephine" expedition, 110–550 fathoms.

Fossil.—At Messina from the Pliocene (Jeffr.)

Dr Gwyn Jeffreys verified my determination of this species. I have failed to see the callus-rib in the mouth to which he refers; but there is within the posterior opening a circular rib or narrow sharp ledge, which from the outside is seen as an opaque band, but with some difficulty may be seen within as a narrow projecting shelf. The edge of the apex seems to me rather chipped than regularly notched.

Dr Jeffreys in his "Lightning" and "Porcupine" Moll. (*loc. cit.*), speaking of this species, says that "in all probability many of the species described by Mr Watson from the 'Challenger' expedition, may ultimately prove to be united with some of the species which I have described." I think it not impossible that his *Cadulus gibbus*, which I know only from description and figures, may turn out to be my *Cadulus ampullaceus;* but in that case it is this latter species which will survive. In regard to the other three species which have priority to mine, and of which two are quoted above, my own impression of course is that the Challenger species, which I have published as distinct from these, are so. At the same time, not being infallible, I would gladly have reviewed my opinions had Dr Jeffreys been good enough to use his familiarity with my species for calling my attention to any point he thought doubtful.

10. *Cadulus exiguus*, Watson (Pl. III. fig. 10).

Cadulus exiguus, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 528.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Very small, short, broad, pinched in, and projecting at both ends; very slightly bent, and that almost entirely in front; very much swollen in the middle, bulging on the concave curve, a little more attenuated behind; pretty strong, polished, translucent and white, with an opaque white band round the apex. *Sculpture:* None. *Mouth* large, straight; edge thin and chipped. *Apical opening* small, straight, chipped, narrowed inside by a minute shelf-like projecting ring. L. 0·076 in. B. at mouth 0·016; at broadest 0·035; at apex 0·01.

It differs from *Cadulus ovulum*, Phil., in being very much smaller, rounder, and contracted into a tube at either end.

11. *Cadulus ampullaceus*, Watson (Pl. III. fig. 11).

Cadulus ampullaceus, Watson, Prelim. Report, pt. 2, Journ. Linn. Soc. Lond., vol. xiv. p. 529.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Culebra Island, West Indies. 390 fathoms. Mud.

Shell.—Small, round, but not symmetrical in its two curves, contracted in front, pinched in behind so as to form a short tube, swollen, the fullest bulge lying behind the

middle. Pretty strong, polished, and translucent white, with an opaque band close to the apex. *Sculpture:* None. *Mouth* large, very slightly oblique; edge thin and chipped. *Apical opening* slightly oval, small, straight, roughened, narrowed inside by a flat, concentrically puckered, and margined ring, which occupies nearly half its diameter (0·014 and 0·006). The margin (about 0·001 thick) of this ring is formed by the projecting end of a short pipe (about 0·005 long), which passes up into the interior of the shell. L. 0·08 in. B. at mouth 0·02, at broadest 0·047; at apex 0·016.

This species is not only much smaller than *Cadulus ovulum*, Phil., from the Mediterranean, but is obviously very different in form and proportions. It differs from *Cadulus exiguus*, Wats., in being much rounder, has no tube anteriorly, is not nearly so elongated posteriorly, and is provided with a distinct posterior pipe.

Sub-class GASTEROPODA, Cuvier,[1] 1798.

Order PROSOBRANCHIA, Milne-Edwards, 1848.

Family LEPETIDÆ, Gray, 1850.

Genus *Lepeta*, Gray, 1842.

Species.

1. *Lepeta cæca* (Müller). 2. *Lepeta* (*Pilidium*)[2] *fulva* (Müller).

1. *Lepeta cæca* (Müller).

Patella cæca, Müller, Zool. Dan. Prodr. (1776), p. 237, No. 2866.
Lepeta cæca, Jeffreys, Brit. Conch., vol. iii. p. 252, vol. v. pl. lviii. fig. 6.
„ „ Gould, Inverteb. Massachusetts (Binney), p. 270, f. 531.
„ „ Jeffreys, Moll. Europe and Eastern North America, Ann. and Mag. Nat. Hist., ser. 4, vol. x. 1872, p. 242.
„ „ Jeffreys, "Valorous" Moll., Ann. and Mag. Nat. Hist., ser. 4, vol. xix. 1877, p. 231.
„ „ G. O. Sars, Moll. Reg. Arct. Norv., p. 123, pl. xx. fig. 17.
„ „ Dall, Alaska Explor., U.S. Nat. Hist. Mus. Report, vol. i. 1879, p. 116.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—From Shetland northwards to the Sea of Okhotsk and to Japan on the E., and to the Atlantic and Pacific Coasts of America on the W. A true Arctic form, found in from 10 to 690 fathoms (Sars and Jeffreys).

Fossil in older and younger Post-pliocene beds of Norway and Sweden, and in the red and coralline crags of England (Jeffreys).

In regard to this species it may be well to observe that the short slope of the shell is the front, as is the case with all the unfissured patelliform shells, except *Propilidium*, the Umbrellidæ, and the Siphonariidæ. The presence in the young of a one-whorled spiral incurved deciduous apex seems fully confirmed (see Jeffr. "Valorous" Dredgings, *loc. cit. supra*).

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[1] The alteration of Cuvier's word to *Gastropoda*, which has found some acceptance, could only have been justified had he been wrong in his spelling, which he is not. Between the two forms of the Greek root in composition, surely Cuvier was free to choose which he pleased, even though he preferred the less common one.

[2] Forbes, Athenæum, Oct. 6, 1849, p. 1018; not of Middendorff, Sib. Reise, p. 214, 1851 (see Dall, Mon. Fam. Lepetidæ, Amer. Journ. Conch., vol. v. 1869, p. 146).

2. *Lepeta* (*Pilidium*) *fulva* (Müller).

Patella fulva, Müller, Zool. Dan. Prodr. (1776), p. 237, pl. xxiv. figs. 1–3.
„ „ Wood, Ind. Test., p. 189, pl. xxxviii. fig. 83.
Tectura fulva, Searles Wood, Crag. Moll., vol. i. p. 161, pl. xviii. fig. 7.
Pilidium fulvum, Forbes and Hanley, vol. ii. p. 441, pl. lxii. figs. 6, 7, animal pl. AA. fig. 3.
Tectura fulva, Jeffreys, Brit. Conch., vol. iii. p. 250, sp. 3, vol. v. pl. lviii. fig. 5.
Scutellina fulva, G. O. Sars, Moll. Reg. Arct. Norv., p. 122, No. 18.
Pilidium fulvum, Dall, Alaska Explor., U.S. Nat. Hist. Mus. Report, vol. i. 1879, p. 117.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. San Miguel, Azores. 1000 fathoms. Volcanic mud. (A dead shell.)

Habitat.—Northern and Arctic seas of Europe and Eastern America, from 5 to 160 fathoms (Dall).

Fossil.—Post-Tertiary beds, Norway (Sars).

As regards the generic place of this species, I have followed Sars and Dall (*loc. cit.*), who have shown that the animal is a *Lepeta*.

Family PATELLIDÆ, Guilding, 1828.

Genera. 1. *Patella*, Linne. 2. *Acmæa*, Eschscholtz.

1. *Patella*, Linne, 1758.

Species.

1. *Patella alticostata*, Angas.
2. *Patella fuegiensis*, Reeve.
3. *Patella granatina*, Linne.
4. *Patella kerguelensis*, E. A. Smith.
5. *Patella tramoserica*, Martyn.

1. *Patella alticostata*, Angas.

Patella alticostata, Angas, Proc. Zool. Soc. Lond., 1865, p. 56, pl. ii. fig. 11.

May 1874. Port Jackson, Sydney. 6 to 7 fathoms.

Habitat.—Port Jackson (British Museum).

2. *Patella fuegiensis*, Reeve.

Patella fuegiensis, Reeve, Conch. Icon., vol. viii. pl. xxviii. fig. 73.
„ „ E. A. Smith, Moll. Kerguelen, Phil. Trans., 1877 (separate impression), p. 14.
„ „ Studer, Fauna v. Kerguelensland, Archiv f. Naturgesch., Jahrg. xxxv. Bd. i. p. 128, No. 20.

Station 149c. January 19, 1874. Lat. 49° 32′ S., long. 70° W. Balfour Bay, Royal Sound, Kerguelen. 20 to 60 fathoms. Volcanic mud.

Station 149. Kerguelen Island. Rocks.

Habitat.—Tierra del Fuego and Falklands (Reeve), Kerguelen (Smith).

3. *Patella granatina*, Linne.

Patella granatina, Linne, Syst. Nat., ed. 12, p. 1258, No. 757.
Martini, Conch. Cab., vol. i. p. 122, pl. ix. figs. 71–74.
Patella granatina, Dillwyn, vol. ii. p. 1027, sp. 27.
„ *apicina*, Lamarck, Anim. s. vert., vol. vi. (1), p. 324; and (ed. Desh.), vol. vii. p. 525, sp. 1.
„ *granatina*, *Id.*, *Ibid.*, *bis*, sp. 2.
„ „ Deshayes, Encycl. méthod., vers. vol. iii. p. 705, No. 1.
„ *apicina*, Delessert, Recueil, pl. iv. fig. 4.
„ *granatina*, Reeve, Conch. Icon., vol. viii. pl. iii. fig. 4.
„ „ Wood, Ind. Test. (Hanley), p. 185, pl. xxxvii. fig. 27.
„ „ Krauss, Moll. süd-afrik., p. 43.
„ „ Hanley, Ipsa Linn. Conch., pp. 419 and 545.
„ „ v. Martens, Einige süd-afrik. Moll., p. 13, No. 43, Jahrb. 1874, p. 125.

October–December 1873. Sea-Point, near Cape Town.

Habitat.—Cape of Good Hope (Krauss and British Museum), Antilles (Deshayes).

4. *Patella kerguelensis*, E. A. Smith.

Patella ferruginea, Reeve, Conch. Icon., vol. viii. pl. xvii. fig. 40 (*nec* Gmel.)
„ *kerguelensis*, E. A. Smith, Moll. Kerguelen, Phil. Trans. Roy. Soc., 1877 (separate impression), p. 11, pl. ix. fig. 13.
„ „ Studer Fauna v. Kerguelensland, Archiv f. Naturgesch., Jahrg. xxxv. Bd. i. p. 128, No. 18.

Station 149A. January 14, 1874. Lat. 49° 8′ S., long. 70° 9′ E. Betsy Cove, Kerguelen Islands. 40 fathoms. Volcanic mud.

Station 149. January 1874. Rocks, Kerguelen Island.

February 6, 1874. Heard Island, S.S.E. of Kerguelen, among sea-weeds on the shore.

Habitat.—Kerguelen, Royal Sound, Swains Bay, Betsy Cove, Cascade Reach—down to a fathom; the dead shells often heaped up on the shore, the leavings of cormorants and sea-gulls.

As regards the animal of this species, the "bluntly serrated frill" which goes round, seems to me distinctively *not* "interrupted," but only depauperated in front of the head, especially above the left tentacle, where there is some appearance of the opening of a duct; and the cirri of the mantle edge, instead of alternating, seem to come in groups of one small black and three smaller grey—the larger, not the "smaller," being the dark-coloured ones.

5. *Patella tramoserica*, Martyn.

Patella tramoserica, Martyn, Univ. Conch., vol. i. pl. xvi.
„ „ Chemnitz, Conch. Cab., vol. xi. p. 179, pl. cxcvii. figs. 1912, 1913.

Patella tramoserica, Lamarck, Anim. s. vert. (ed. Desh.), vol. vii. p. 542, sp. 47.
" " Reeve, Conch. Icon., vol. viii. pl. xiii. fig. 27.
" " Angas, Proc. Zool. Soc. Lond., 1867, p. 221, No. 222.

May 1874. Port Jackson, Sydney. 6 to 7 fathoms.

Habitat.—Australia, Port Jackson, Sydney (British Museum, Angas).

2. *Acmæa*, Eschscholtz, 1830.

Species.

1. *Acmæa dorsuosa* (Gould). 2. *Acmæa saccharina* (Linne).
3. *Acmæa virginea* (Müller).

In regard to the name of this genus, the evidence adduced by Mr Dall is on the whole in favour of *Acmæa*, Esch., as against *Tectura*, Audouin and Milne-Edwards. The difficulty, however, of deciding between these two names and the want of agreement still prevailing may justify my restating the case in so far as I have personally ascertained the facts.

No discussion need, I think, be raised regarding the mere words *Acmæa* or *Tectura*, nor regarding the diagnosis of the genera supplied by their respective authors. *Acmæa* is an adjective, but Linné's law says merely, "Nomina generica adjectiva substantivis pejora sunt adeoque non optima." *Acmea* (*sic*) had been previously proposed by Hartmann in 1821 for the genus now known by Risso's later name of *Truncatella*, but was abandoned by its own author in that very year, and may the more freely be set aside, since the same author's genus *Acme*, also proposed in 1821, has been accepted for a well-known land mollusc. That Eschscholtz in his later diagnosis erroneously puts the branchial cavity on the left instead of the right of the animal is obviously a mere slip of the pen. And, finally, if he did not single out one species in particular as a type of the genus he mentions, what for his purpose was still better, and is true, namely, that all the species of supposed Patellas found on the north-west coast of America belong to the genus *Acmæa*.

On the other hand, "Tecture" is the Gallicised form which French writers always used for Latin names, and *the* characteristic feature of the genus is distinctly stated by Audouin and Milne-Edwards, and *Tectura virginea*, Müll., though not named, is plainly referred to as their type species. Further, these authors (men of experience in such matters) certainly believed they had sufficiently determined their genus, for in their finished work (Animaux s. vert. des Côtes de la France, 2 vols. 8vo, Paris, 1832, see vol. i. p. 144, note), from which their memoir to the Academy was an extract, they say, referring to their observations on *Tectura*: "Nous avons pris date pour ce fait . . . . dans le résumé des nouveaux recherches sur l'histoire naturelle des côtes de la Manche que nous avons presenté à l'Académie des Sciences dans la séance du 26 Octr. 1829."

I have referred to these points because weight has been laid on them by the advocates of one or other name. But putting aside all these initial questions, we have simply to ask which name, *Acmæa* or *Tectura*, has priority of publication. Now as regards that question, had the British Association accepted the date at which a paper was openly read to a society as the date of publication, no difficulty would have existed, but as the matter stands certainty is impossible. Audouin and

Milne-Edwards presented their paper to the Academy on October 26, 1829 (see above). In the Annales des Sciences Naturelles, 2nd Series, vol. xvi. (1841), p. 374, it is stated to have been read to the Academy on November 23, 1829, and Cuvier's official "Analyse" of this paper was read to the Academy on November 15, 1830, as stated in the Annales, &c., 1st Series, vol. xxi. p. 317. None of these acts, however, constituted publication, which only took place when Cuvier's "Analyse" was issued from the press. When that occurred it is impossible to say; we only know that it is to be found in the Annales des Sciences Naturelles, 1st Series, vol. xxi. p. 323–329, a volume issued for the year 1830, and containing reports down to the close of that year, and which, therefore, if issued in its entirety, could not have been published before 1831 at the earliest. *Tectura*, therefore, published in that volume, cannot be reckoned to date from earlier than 1831.

Acmæa, on the other hand, was certainly published by Eschscholtz in 1830 (see p. 24 of Nat. Hist., Appendix, vol. ii. of Kotzebue's Neue Reise, Weimar, 1830), and that probably at an early period in the year, since the English translation of that work (in which see Acmæa, p. 350, vol. ii. Appendix) was brought out by Colburn and Bentley in that same year. In any case, the name *Acmæa* was thus published both in German and in English in 1830. There was a Russian edition published at St Petersburg in 1828, but a foreign correspondent who obligingly examined that work at my request, writes that it does not contain Eschscholtz's Nat. Hist. Appendix. Mr Dall (Alaska Explorations, p. 118) refers to "Dorpat, 1828," but that place and date refer only to Eschscholtz's own study; at least, I have failed to trace any publication to which this can refer.

Acmæa thus was published in 1830, and in all likelihood early in the year; *Tectura*, so far as we have evidence, was not published till 1831. The former name must therefore be preferred, as has been here done.

1. *Acmæa dorsuosa* (?), Gould (Pl. IV. fig. 1).

Tectura dorsuosa, Gould, Otia, p. 115.

May 14, 1875. Oosima, Japan.

Habitat.—Japan (Gould).

This is a very young specimen, and is identified as this species with much hesitation, but with a good deal of care.

2. *Acmæa saccharina* (Linne).

Patella saccharina, Linne, 12th ed., p. 1258, No. 754.
Martini, Conch. Cab., vol. i. p. 120, pl. ix. figs. 70, 75, 77.
Patella saccharina, Dillwyn, vol. ii. 1023, No. 17.
" " Lamarck, Anim. s. vert., vol. vi. (1), p. 326; and (ed. Desh.), vol. vii. p. 527, sp. 7.
" " Wood, Ind. Test. (Hanley), p. 185, pl. xxxvii. fig. 17 (and *Acmæa*).
" " Deshayes, Encycl. méthod., vers. vol. iii. p. 706, sp. 5.
" " Reeve, Conch. Icon., vol. viii. pl. xxviii. fig. 72.
" *lanx, Id., Ibid.*, pl. xxx. fig. 82.
" *saccharina*, Hanley, Ipsa Linn. Conch., pp. 418, 545.
" " Lischke, Japan. Meer. Conch., vol. i. p. 113.

May 14, 1875. Oosima, Japan. (No depth given.)

Habitat.—Philippines (Cuming), and Port Jackson and Fiji (British Museum), Moluccas (Rumph.), Japan (Lischke).

3. *Acmæa virginea* (Müller).

Patella virginea, Müller, Prodr. Zool. Dan., 1776, p. 237.
„ „ Wood, Ind. Test., p. 189, pl. xxxviii. fig. 81 (*Acmæa*).
„ „ Lamarck Anim. s. vert. (ed. Desh.), vol. vii. p. 543, sp. 50.
Tectura „ Searles Wood, Crag. Moll. Pal. Soc., vol. i. p. 161, pl. xviii. fig. 6.
Acmæa „ Forbes and Hanley, vol. ii. p. 437, pl. lxi. i. fig. 2.
Tectura „ Gwyn Jeffreys, Brit. Conch., vol. iii. p. 248, vol. v. pl. lviii. fig. 4.
„ „ Mörch, Faunula Moll. Islandiæ, p. 32, No. 90.
Acmæa „ Dall, Alaska Explor., U.S. Nat. Hist. Mus. Report, vol. i. p. 120.
Tectura „ G. O. Sars, Moll. Reg. Arct. Norv., p. 121, No. 16.
„ „ Gwyn Jeffreys, Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1882, p. 671, sp. 1.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 fathoms. Volcanic mud.

Habitat.—From Iceland (Mörch) to St Helena, ranging from low water to 150 fathoms (Jeffr.)

Fossil.—From the Upper Pliocene of Scotland, England, Norway, and Sweden.

I have not quoted the *Patella virginea* of Cantraine (Bull. Acad. Brux., 1835, vol. ii. p. 395), nor of Aradas and Benoit (Conch. Mar. Siciliæ, p. 120, No. 303), nor have followed Dr Gwyn Jeffreys in ascribing the species to the Mediterranean, as all these identifications are, according to Monterosato (Enumerazione, p. 18), erroneous, and arise from a confusion of Müller's species, which is not Mediterranean, with *Acmæa unicolor*, Forb., or *Acmæa gussonii*, Costa.

Family Cocculinidæ, Dall, 1882.

Genera. 1. *Cocculina*, Dall. 2. *Addisonia*, Dall.

1. *Cocculina*, Dall, 1882.

Cocculina angulata, Watson (Pl. IV. fig. 2).

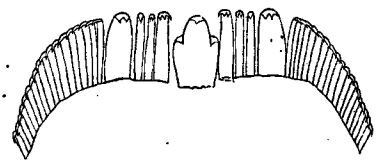
Cocculina angulata, Watson, Prelim. Report, pt. 16, Journ. Linn. Soc. Lond., vol. xvii. p. 38.

Station 203. October 31, 1874. Lat. 11° 6′ N., long. 123° 9′ E. Philippines. 20 fathoms. Mud.

Shell.—Small, thinnish, with a strongish membranaceous epidermis, compressedly patelliform, oval, with a long convex anterior slope, a short slightly concave posterior slope, while the compressed side slopes are very steep and very slightly convex; there is a blunt reverted tip, but no embryonic shell; the surface is rayed with five smooth, rounded, unequal riblets. *Sculpture*: Longitudinals—from the top proceed radiating riblets, which

are regular, delicate, well rounded, raised and unequal, a few being a little stronger than the rest, which, to the number of two to four, closely occupy the intervals. Spirals—these are microscopic, rounded, close-set, and very faint. *Colour:* under the strongish, hard, membranaceous, pale brownish epidermis the shell is porcellanous white. *Apex:* the embryonic apex has been removed, and a scarred plug at the very top of the back slope fills the hole it left. *Margin* thin and broken, and overlapped by the epidermis. *Inside* porcellanous, delicately fluted, open to the apex, with a strongish horse-shoe scar, with two oval muscular impressions, and the prominent head-scar shaped like that in *Patella*, only somewhat larger in proportion. L. 0·13 in. B. 0·07. H. 0·07.

I dissected the animal of this species with great care, but not much satisfaction, the specimen being extremely small and necessarily somewhat damaged by preservation in spirit. No eyes could be seen; but as their absence on the surface is sometimes due to a power of internal withdrawal, I looked for them carefully during dissection, but in vain. There were no appendages to the side of the foot or on the mantle-edge, a feature on which Mr Dall dwells in establishing the genus. He describes the branchia as a single asymmetrical gill, but plumose. In the Challenger species there was no appearance of a plume, but a somewhat stumpy finger-shaped process projected backward from the lower right side of the neck; and from the side of this process another, very much smaller, issued in the same direction. The surface of both these (and of them alone) was finely tessellated or beaded; and in each bead there seemed to be the loop of a blood-vessel. The dentition is, as Mr Dall observes, very like that of *Scutus australis*, Quoy, given in Gray's Guide, p. 163, so far, that is, as general arrangement and relation are concerned; but in *Cocculina angulata* the centre tooth is higher and narrower, with a much smaller cusped point, and is shouldered at either side; the three following laterals on either side in form and position are like those given by Gray at p. 190 (not p. 172), fig. 103, as those of *Lepeta cæca*, only that the inmost one has three, the second two, and the third one cusp. Thus far, therefore, Gray's figure of *Lepeta cæca*, p. 190, agrees better, so far as it goes, with the toothing of *Cocculina angulata;* but beyond the three small laterals occurs a single largish bicuspid tooth, not nearly so formidable a weapon as that of *Scutus australis*, which is enormously larger, more curved, and tricuspid. Beyond these, as in Gray's figure, but very much more numerous and more crowded, are an infinity of small hooked laterals. Attaching very little value to systems of classification of Mollusca based on dentition, I should have hesitated to follow Mr Dall in separating this group from *Lepeta;* but there is one fact which probably is a sufficient reason for a step otherwise much to be deplored, viz., that in *Cocculina* the long slope of the shell is in front, a feature which the genus shares with *Propilidium* in common with the whole of the "Fissured Limpets," and which contradicts the common rule for the unfissured Limpets, that the short slope is in front.



Dentition of *Cocculina angulata*, Wats., highly magnified.

2. *Addisonia*, Dall, 1882.

Addisonia excentrica (Tiberi).

Gadinia excentrica, Tiberi, Journ. de conch., 1857, vol. vi., p. 37, pl. ii. fig. 6.
Addisonia paradoxa, Dall, Proc. U.S. Nat. Mus., 1882, vol. ii. p. 405.
„ „ Verrill, Cat. N. Eng. Moll., Trans. Conn. Acad., 1882, vol. v. pt. 2, p. 533.
„ *eccentra*, Gwyn Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1882, p. 673.
„ *paradoxa*, Verrill, Second Cat. N. Eng. Moll., Trans. Conn. Acad., 1884, vol. vi. pt. 1, p. 256, pl. 29, f. 10 (teeth) 11.11a (shell) 11b (animal).

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of Azores. 1000 fathoms. Pteropod ooze. Bottom temperature 39·4°.

Habitat.—Sardinia (Tib.), North Atlantic (Jeffr.), New England, 69 to 130 fathoms (Dall), and to 640 fathoms (Verrill).

Family Fissurellidæ, Risso, 1826.

Genera. 1. *Fissurella*, Brug. 2. *Emarginula*, Lamarck. 3. *Zeidora*, A. Adams. 4. *Puncturella*, R. T. Lowe.

1. *Fissurella*, Brug. 1789.

Species.

1. *Fissurella crassa*, Lam.
2. *Fissurella maxima*, Sow.
3. *Fissurella mutabilis*, Sow.
4. *Fissurella picta* (Gmelin).
5. *Fissurella* (*Lucapina*) *cayenensis*, Lam.
6. *Fissurella fumata* (?), Reeve.

1. *Fissurella crassa*, Lamarck.

Fissurella crassa, Lamarck, Anim. s. vert., vol. vi. (2), p. 11; and (ed. Desh.) vol. vii. p. 592, No. 3.
„ „ Delessert, Recueil, pl. xxiv. fig. 6.
„ „ D'Orbigny, Amérique mérid., vol. v. p. 472, No. 428, 1847.
„ „ Reeve, Conch. Icon., vol. vi. pl. i. fig. 4.

November 18, 1875. Valparaiso. Shore.

Habitat.—Valparaiso (British Museum), Chili (D'Orbigny).

Sowerby's figures in Thes., vol. iii. p. 184, sp. 6, pl. ccxxxvii. figs. 16, 17, seem to be the same as those in Conch. Ill., f. 9 and 11, which Deshayes denies to be this species. Gray, in his list of D'Orbigny's South American shells preserved in the British Museum, p. 50, says this species is *Fissurella clypeiformis*, Sow.

2. *Fissurella maxima*, Sowerby.

Fissurella maxima, Sowerby, Proc. Zool. Soc. Lond., 1834, p. 123
" " Sowerby, Conch. Ill., f. 18.
" " Sowerby, Thes., pt. 21, vol. iii. p. 187, sp. 22, pl. ccxxxvi. figs. 8, 9 (not *Macroschisma maxima*, Ad.)
" " D'Orbigny, Amérique mérid., vol. v. p. 475, No. 435, pl. lxiv. figs. 4–7.
" " Reeve, Conch. Icon., vol. vi. pl. iv. fig. 22.

November 18, 1875. Valparaiso. Shore.

Habitat.—Valparaiso (Sowerby), Chili (D'Orbigny), Peru and Rio de Janeiro (British Museum).

3. *Fissurella mutabilis*, Sowerby.

Fissurella mutabilis, Sowerby, Proc. Zool. Soc. Lond., 1834, p. 126.
" " Sowerby, Conch. Ill., f. 67, 70.
" " Sowerby, Thes., part 21, vol. iii. p. 190, sp. 48, pl. ccxxxix. figs. 70, 74, 79, 93.
" " Reeve, Conch. Icon., vol. vi. pl. vii. fig. 43.
" " Krauss, Südafrik. Moll., p. 65, No. 3.
" " v. Martens, Einige südafrik. Moll., Jahrb. Malak. Gesellsch., 1874, p. 127.

October 29–December 16, 1873. Sea-Point, near Cape Town.

Habitat.—Cape of Good Hope (Krauss).

4. *Fissurella picta* (Gmelin).

Patella picta, Gmelin, p. 3729, No. 198.
Martini, Conch. Cab., vol. i. p. 131, pl. xi. fig. 90.
Patella picta, Dillwyn, vol. ii. p. 1060, No. 99.
Fissurella picta, Deshayes, Encyc. méthod., vers. vol. ii. p. 131, No. 1.
" " Lamarck, Anim. s. vert., vol. vi. (2), p. 10; and (ed. Desh.), vol. vii. p. 590, No. 1.
" " Sowerby, Conch. Ill., figs. 4 and 26.
" " Sowerby, Thes. Conch., vol. iii. pp. 121, 186, sp. 20, pl. ccxxxvi. figs. 10, 11, pl. ccxxxvii. fig. 35.
" " D'Orbigny, Amérique mérid., vol. v. p. 472, No. 427.
" " Reeve, Conch. Icon., vol. vi. pl. i. fig. 6.

Station 315. January 26, 1876. Lat. 51° 40′ S., long. 57° 50′ W. Port Stanley and Port William, Falkland Islands. 12 fathoms. Sand and gravel.

Habitat.—Strait of Magellan (D'Avila), Falklands (Sowerby), Chili and Valparaiso (D'Orbigny).

Gray in his British Museum list of D'Orbigny's shells from South America, p. 50, says this species is the *Fissurella oriens*, Sow.

5. *Fissurella* (*Lucapina*) *cayenensis*, Lamarck.

Fissurella cayenensis, Lamarck, Anim. s. vert., vol. vi. (2), p. 12; and (ed. Desh.), vol. vii. p. 594, No. 6.
" " Deshayes, Encyc. méthod., vers. vol. ii. p. 137, No. 22.
" " Delessert, Recueil, pl. xxiv. fig. 5.
" " Sowerby, Conch. Ill., f. 7.
" " Sowerby, Thes. Conch., pt. 21, vol. iii. p. 197, sp. 94, pl. ccxl. (*gen.* v.), fig. 101.
" " Reeve, Conch. Icon., vol. vi. pl. xii. fig. 82.
" " Fischer, Coquilles Guadaloupe (Beau), Revue coloniale, 1857, p. 19, sp. 6.
" " Tristram, Proc. Zool. Soc. Lond., 1861, p. 405.

Station 33. April 4, 1873. Lat. 32° 21′ 30″ N., long. 64° 35′ 55″ W. Bermuda. 435 fathoms. Coral mud.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Pernambuco. 350 fathoms. Red mud.

Habitat.—Cayenne and Guinea[1] (Sowerby), West Indies and Cayenne (British Museum), Guadaloupe (Beau).

The specimen from Station 33 is a young shell in very bad condition, but agrees with nothing so well as with this species.

Deshayes (*loc. cit.*) says that Lamarck has united two species under this one name. Delessert has surely perpetuated the confusion, for his figure can hardly refer to this species, and in various museums there is a want of definiteness about the forms classed under this name.

6. *Fissurella* (*Lucapina*) *fumata* (?), Reeve.

Fissurella fumata, Reeve, Conch. Icon., vol. vi. pl. ix. fig. 63.
" " Sowerby, Thes. Conch., pt. 21, vol. iii. p. 197, sp. 89, pl. ccxl. (gen. v.), figs. 95–97.

October 29–December 16, 1873. Sea-Point, near Cape Town.

No habitat is given by Reeve. Sowerby ascribes the species to the West Indies, but surely his figure does not represent the same species. The Challenger specimen is so broken that its identification with any certainty is impossible. In Krauss's Südafrik. Moll., pp. 63–68, the only species to which this could belong, is *Fissurella elevata*, Dunker; but even after Krauss's corrections regarding the fissure are made, the 180 ribs (see Philippi, Abb. and Besch., vol. ii. p. 67, pl. xiii. f. 4) make it impossible to bring the Challenger specimen under that species, unless, indeed, one were allowed to reduce that number given in the text to something like the number presented in the figure.

[1] Probably by mistake for Guyana.

2. *Emarginula*, Lamarck, 1801.

Species.

1. *Emarginula (Tugalia) parmophoidea*, Q. and G. 2. *Emarginula (Hemitoma) rugosa*, Q. and G. 3. *Emarginula (Scutus) anatina* (Donovan).

1. *Emarginula (Tugalia) parmophoidea*, Quoy and Gaimard.

Emarginula parmophoidea, Quoy and Gaimard, "Astrolabe," vol. iii. p. 325, pl. lxviii. figs. 15–16.
" " Lamarck, Anim. s. vert. (ed. Desh.), vol. vii. p. 583, sp. 3.
Tugalia, Reeve, Conch. Icon., vol. xvii. pl. i. fig. 4.
" Sowerby, Thes. Conch., pt. 22, vol. iii. p. 221, sp. 1, pl. xiv. figs. 5, 11, 16.
" Angas, Proc. Zool. Soc. Lond., 1865, p. 185, No. 194.
Tugalia parmophoroides, Hutton, Cat. Mar. Moll. New Zealand, p. 43, No. 194.
Emarginula (Tugalia) parmophoroïdes v. Martens, Crit. List Moll. New Zealand, p. 35.
Tugalia parmophoidea, Hutton, Manual New Zealand Moll., p. 106.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
May 1874. Port Jackson, Sydney. 6 to 7 fathoms.

Habitat.—Australia and New Zealand, Auckland Island (Hutton), Great Barrier Island, and Port Jackson, Australia (British Museum).

2. *Emarginula (Hemitoma) rugosa*, Quoy and Gaimard.

Emarginula rugosa, Quoy and Gaimard, "Astrolabe," vol. iii. p. 331, pl. lxviii. figs. 17, 18.
" " Lamarck, Anim. s. vert. (ed. Desh.), vol. vii. p. 585, No. 7.
" *aspera*, Gould, U.S. Expl. Exped., p. 372, pl. xxxii. fig. 493 A–C.
" " Sowerby, Thes. Conch., pt. 22, vol. iii. p. 219, sp. 58, pl. ccxlviii. (gen. xiii.) figs. 92, 93, 95, 96–102.
Hemitoma rugosa, Angas, Proc. Zool. Soc. Lond., 1867, p. 219.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—South Australia, Tasmania, Port Jackson.

3. *Emarginula (Scutus) anatina* (Donovan).

Patella anatina, Donovan in Rees' Encycl., 1820, vol. v., Nat. Hist. Plates, Conchology, pl. xvi.
Parmophorus elongatus, De Blainville, Bull. soc. philom., Paris, 1817, p. 25. This name was pre-occupied by Lamarck for a fossil species.
" " De Blainville, Dict. sci. nat., vol. xxxvii. p. 557, do.
" " De Blainville, Malacologie, pl. xlviii. figs. 2–2a, do.
Emarginula elongata, Sowerby, Genera Rect. and Foss. Shells, vol. i. pl. cxlvi. fig. 1.
Scutus elongatus, A. Adams in Sowerby, Thes. Conch., pt. 22, vol. iii. pl. ccxlviii. figs. 1, 2.
" " Sowerby in Reeve, Conch. Icon., vol. xvii. pl. i. fig. 1 a–b.
" *unguis*, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 221, in part *nec* Linn.

Parmophorus australis, Lamarck, Anim. s. vert., 1st ed. 1822, vol. vi. pt. 2, p. 5, 2d ed., vol. vii. p. 579.
„ „ Cuvier, Règne anim. (ed. Desh.), pl. lxv. figs. 1, 1a.
„ „ Chenu, Man. conch., vol. i. p. 373, f. 2801.
„ „ Reeve, Conch. Syst., pl. cxxxix. figs. 2, 3.
„ „ Hogg, Trans. Micr. Soc. Lond., 1868, vol. xvi. pl. xii. fig. 57 (the dentition).
„ *convexus*, Quoy and Gaimard, "Astrolabe," vol. iii. p. 322, pl. lxix. figs. 5–16.
Scutus tumidus, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 222, in part *nec* Quoy and Gaimard.
„ *elongatus*, Angas, Proc. Zool. Soc. Lond., 1867, p. 219, No. 212, *nec* Lam., see above.
„ *anatinus*, E. A. Smith, Journ. Conch., Aug. 1879, vol. ii. p. 257.
Parmophorus australis, Tyron., Struct. Conch., vol. ii. p. 329, pl. lxxxiii. fig. 21.

April 23, 1874. Port Jackson, Sydney. 6–15 fathoms.

Habitat.—Western Harbour (Q. and G.), Port Jackson, Sydney (Angas and British Museum).

It will be observed that the synonymy of this species had fallen into extreme confusion, and Mr Edgar Smith, who kindly lent me his list of references (since published, *loc. cit.*),[1] has done admirable service in establishing the true nomenclature of this and the other species of the genus.

The Port Jackson species, which is very abundant, is Mr Smith's var. *a*, characterised by an "elongate narrow shell" somewhat contracted in front; his var. *b*, with a "proportionally broader shell" (which has a further synonymy of its own), seems confined to Southern and Western Australia.

3. *Zeidora*, A. Adams, 1860.

Zeidora is classed here under the Fissurellidæ in accordance with the view of its author, from which, in the absence of the animal, it would be rash to depart. It seems, however, rather an internal than an external shell; and its true place will probably be found among the Opisthobranchiata, perhaps in the neighbourhood of *Pleurobranchus*. *Crepidemarginula*, a genus proposed by Professor Seguenza for a Pliocene fossil of great rarity, is A. Adams's *Zeidora*.

Zeidora naufraga,[2] Watson (Pl. IV. fig. 3).

Zeidora naufraga, Watson, Prelim. Report, pt. 16, Journ. Linn. Soc. Lond., vol. xvii. p. 27.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. N. of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—White, delicate, depressed, oblong, pointed behind, with a minute short apex, rounded and cleft in front, with a broad flat keel bearing the old cleft-scar and extending the whole length of the shell: the enormous mouth is closed behind by a crepidula-like

[1] I have followed his arrangement of authors quoted.

[2] The name was suggested by the resemblance of the shell to a half-decked boat which has been shipwrecked.

partition. *Sculpture:* Longitudinals—from the apex to the cleft across the middle of the back runs a broad raised keel, flat on the top, where it is scored by the minute, delicate, sharp, prominent, close-set, but not contiguous scars of the old cleft; on either side it is bordered by a sharp marginal line: from these marginal lines branch off feeble irregular diverging threadlets, between which, as they go wider apart, others arise; the intervals between them are two to three times the breadth of the threadlets. Spirals, strictly speaking, there are none, but the whole surface is scored at right angles to the longitudinals with a series of threadlets, very similar in form, but rather more closely set; these radiate from the apex and indicate the old mouth-edges. *Colour* porcellanous white, which is dead on the threadlets, but almost translucent elsewhere from the extreme thinness of the shell. *Apex:* At the posterior end of the shell there is a narrow, rounded, prominent beak, within which, a little bent to the right and projecting slightly above the margin of the mouth, is the minute apex of one whorl. *Mouth* oblong. *Margin* minutely denticulated by the ends of the ribs; cleft in front by a strong, parallel-sided, blunt-ended fissure; behind, it is peculiarly patulous, being markedly bent outwards from the line of attachment of the septum, this bending being strongly shown on the outside of the shell. *Inside* glossy, smooth; a strong depression corresponding to the exterior keel extends from end to end of the shell. *Septum:* A little way within the margin, and deepest at the end, is the short oblique septum, which is faintly arched, with a concave edge in front. L. 0·38 in. B. 0·2. H. 0·12.

The present species, though somewhat chipped, is of great beauty. It differs from *Zeidora calceolina*, A. Ad., which is rudely cancellated, and is also wider and more depressed. It is liker *Zeidora reticulata*, A. Ad.; but is larger and deeper, has the old cleft-scar raised on a projecting ridge which forms a strong internal furrow, has the beak sharper and more projecting, the form is more oblong and more pinched-in at the sides, the sculpture-lines are much finer and less regular than in that species.

Professor Seguenza has had the kindness to send me a careful sketch of the solitary specimen which exists of his *Crepiemarginula reticulata* from the Astian or Middle Pliocene of Rhegium in Calabria (see Formazione Terz. di Reggio-Calabria, p. 273). It proves, as I inferred from the description, to be a *Zeidora;* and as in that genus *reticulata* is a specific name already used by A. Adams, I would propose *Zeidora seguenzæ* for the Calabrian fossil. As compared with *Zeidora naufraga*, this Calabrian fossil is much higher in front, much lower behind, where also it is much broader and rounder, with a less pinched-in apex; it is more widely ribbed, the scores on the scar are wider apart and coarser; internally the edge is more coarsely crimped, and the septum is very much larger, being much more prolonged forward, and is horizontal instead of oblique; the old cleft-scar, too, is not raised on a projecting ridge, and does not form any internal furrow.

I regret extremely to have no knowledge of *Zeidora ligustica*, Bellardi, beyond that of its name, and the fact of its belonging to the Pliocene of North Italy. I wish, however, to call attention to it, that some other person more favourably situated than myself may institute a comparison between it and the "Challenger" species.

4. *Puncturella*, Lowe, 1827.

Species.

1. *Puncturella clathrata*, Jeffr.
2. *Puncturella agger*, Wats.
3. *Puncturella brychia*, Wats.
4. *Puncturella* n. sp.
5. *Puncturella noachina* (Linne).
6. *Puncturella oxia*, Wats.
7. *Puncturella sportella*, Wats.
8. *Puncturella* (*Cranopsis*) *asturiana* (Fischer).
9. *Puncturella* (*Cranopsis*) *granulata* (Seg.)
10. *Puncturella* (*Cranopsis*) *profundi*, Jeffr.
11. *Puncturella* (*Fissurisepta*) *rostrata*, Seg.

The known species of this genus are few. Adams in the "Genera" (vol. i. p. 451) enumerates only seven; and of these, *Puncturella princeps*, Mighels, and *Puncturella galeata*, Gould, are certainly the same as *Puncturella noachina*, Linne; while others probably need revision. Dr Gwyn Jeffreys, in his "Valorous" Report (Ann. and Mag. Nat. Hist., 1877, Ser. 4, vol. xix. p. 232), describes one new species, and refers to three others from the "Porcupine" dredgings, of which he has since described one in his "Lightning" and "Porcupine" Moll. (Proc. Zool. Soc. Lond., 1882, p. 675). The other two are Sicilian Pliocene fossils described by Seguenza. Mr W. H. Dall, in his "Report on the 'Blake' Dredgings" (Bull. Mus. Comp. Zool., August 25, 1881, pp. 75, 76), has described two new and very interesting species from the Gulf of Mexico. One species from the Bay of Biscay, *Puncturella asturiana* (*Rimula*), has been published by Dr Fischer. All these are referred to below.

Looking at these facts, one is struck by the very large number of species (no fewer than eight) from one locality. Further, if we take in connection with this the poverty of specimens from that locality, and also the rarity of the genus in the dredgings in general, we can hardly doubt that the true home of *Puncturella* has not yet been found.

My own observations entirely confirm the remarks of Mr W. H. Dall ("Blake" Dredgings, Bull. Mus. Comp. Zool., vol. ix. p. 76), that the presence or absence of buttresses to the septum is a feature that cannot be taken as a basis of distinction, since it is not constant in the same species.

In descriptions of species under this genus a good deal of confusion would be avoided if it were remembered that the fissure lies in front of, not behind, the apex. The whole of Gould's descriptions of *Rimula* (U. S. Expl. Exped., Moll., pp. 368–372, figs. 475–478) apply to this genus—a fact one would hardly recognise from his figures of the animals, in which the tentacles are represented as being of extreme length and fineness.

As some confusion exists regarding the genera of the group Puncturellidæ, I subjoin a notice of them.[1]

Puncturella, Lowe.	Fissure a long cleft at the top, apex persistent, sculpture reticulate, internal septum arched.
Cranopsis, A. Adams.	Fissure a long cleft between the top and the front edge, apex persistent, sculpture reticulate, internal septum arched.

[1] For a comparison of *Rimula Cranopsis* and *Puncturella* (*Cemoria*), see Journ. de Conch., Paris, vol. xiv., 1866, p. 169.

Fissurisepta, Seguenza.	Fissure a round hole at the tip, whole apex removed, shell glassy with minute white tubercles, internal septum a straight slightly oblique lamina.
Rimula, Defrance.	Fissure a long cleft between top and front edge, apex persistent, sculpture reticulated, no internal septum.
Semperia, Crosse.	Fissure a long cleft near the front edge, apex persistent, sculpture reticulated, no internal septum.

This last genus is founded merely on the young shell of *Emarginula fissura*, Linn. = *reticulata*, Sow., which very soon loses the distinctive feature referred to above, but often in maturity has the front edges of the fissure very close together, and sometimes overlapping though separate. It is *Emarginula emendata*, Sow., the *Semperia paivana*, Crosse.

As regards the previous genus *Rimula*, it was created by Defrance for some Middle Eocene fossils from the North of France. These unfortunately I did not see in the magnificent collection of the École des Mines at Paris, and the Jurassic Rimulas which I examined there are so choked with the hard limestone matrix in which they are preserved, that the inside of the shell is invisible. Morris and Lycett in their "Gasteropoda of the Great Oolite" (Pal. Soc. Lond., pp. 86 and 87) give no information as to the interior of the species they describe. Pictet in his Palæontologie (2d ed., vol. iii. p. 283), while giving no help in his text, figures (see pl. lxviii. fig. 20) *Rimula blainvillei*, Defr., and shows the interior certainly without any septum, which agrees exactly with Defrance's silence regarding any such feature. *Rimula* is therefore a genus without a septum. That is how Adams understood it when he classed under it his five little species from the Pacific. If, therefore, the presence of a septum should be established in Defrance's type species, no choice would remain but either to suppress the genus *Rimula* altogether, or, which would be better, to preserve the name and attribute the genus to A. Adams.

1. *Puncturella clathrata*, Jeffreys.

Puncturella clathrata, J. Gwyn Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., Nov. 14, 1882, p. 676, pl. l. fig. 11.
„ *plecta*, Watson, Prelim. Report, pt. 16, Journ. Linn. Soc. Lond., vol. xvii. p. 34, sp. 6.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—North Atlantic.

Shell.—Small, porcellanous, oblong, scarcely perceptibly broader in front; its slopes are conical and straight till close to the top, which projects backwards but little; there are strongish ribs and still stronger concentric threads; the slit is short and broad. *Sculpture:* There are about 35 strongish rounded riblets with feebler ones between, bringing up the total number to 60 or 70; overlying these, and forming minute knots at the crossings, are rather stronger, concentric, rounded threads, giving to the surface a wattled appearance. *Colour* faintly brownish grey. *Apex* rather coarse, curled in, but very little reverted or flattened; there are just two whorls in all. *Slit* oblong, being short and

broad; as seen from without, one half is open leading into the interior, the other is closed by the very curved septum. *Margin* crenulated and crimped by the ribs. *Inside* glassy, blunt at the top, not being hollowed into the apex, strongly furrowed by the ribs, less so by the concentric threads; there is no anterior furrow: seen from within, the slit is semi-oval, and the strong septum is excessively short and straight and is almost perpendicular; from it a slight callus encircles the opening of the slit. L. 0·25 in. B. 0·16. H. 0·13.

This species in form somewhat resembles *Puncturella agger*, but is longer and narrower; the sculpture and slit are very markedly, and the apex at least unmistakably, different. In all these respects it differs from *Puncturella noachina*, Linn., to the young of which it has a vague resemblance. That species also is usually in all stages of growth narrower in front than behind. I failed to recognise either the white or transparent specks, one or other of which are so generally present in the Fissurellidæ.

2. *Puncturella agger*,[1] Watson (Pl. IV. fig. 6).

Puncturella agger, Watson, Prelim. Report, pt. 16, Journ. Linn. Soc. Lond., vol. xvii. p. 32, sp. 3.

Station 24. March 25, 1863. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. N. of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Small, porcellanous, oval, broader in front; side slopes straight, the front convex, the back concave, rather high, but with the top depressed and thrust out backwards, yet little projecting, the apex being flattened out on the posterior slope; there are many not crowded slight radiating ribs set with stumpy prickles; the long and lanceolate slit is on the crest, and from it a ridge runs down the front slope. *Sculpture:* The riblets are very slight, but are made distinct by the little triangular prickles which pretty closely stud them; these prickles more irregularly and remotely tally with feeble lines of growth; the ridge down the front slope is small, and is crowned with two of the riblets parted by a narrow furrow; these riblets along the slit rise into sharp laminæ. *Colour:* The shell is porcellanous white, with a slight ruddy tinge. *Apex* somewhat depressed and shortly projected backward, curling in on the central line of the shell, but with the extreme tip flattened out on the posterior right slope. There are $2\frac{1}{4}$ whorls in all. *Slit* lies high on the front slope, distant from the apex about once, and from the margin about twice its own length. It is long and narrow, bluntly rounded at the upper end, and produced in front to a long sharp point. *Margin* is thin and not fretted with the rib-ends. *Inside* glassy, deeply hollowed into the apex, feebly rayed, and having the rays picked out with bright specks corresponding to the external prickles: a long shallow furrow, bordered by a minute ridge on either side, runs widening upwards from the margin

[1] So called from the little ridge that runs down from the front slope of the shell from the slit.

to the slit, which is covered in all its length by the somewhat contracted, sinuous-edged, cross-scored, straight, glassy septum, which arches in to the apex. L. 0·17 in. B. 0·13. H. 0·09.

This species has somewhat the form of *Puncturella granulata*, Seg., but is not so compressed, and the sculpture is quite different.

3. *Puncturella brychia*,[1] Watson (Pl. IV. fig. 7).

Puncturella brychia, Watson, Prelim. Report, pt. 16, Journ. Linn. Soc. Lond., vol. xvii., p. 32, sp. 4.

Station 47. May 7, 1873. Lat. 41° 14′ N., long. 65° 45′ W. Off Halifax, Nova Scotia. 1340 fathoms. Blue mud.

Shell.—Very small, porcellanous, translucent, oval, very slightly broader in front; its side slopes are slightly, its front slope extremely convex, its back slope is short and flattened, and very much overhung by the protuberant apex; there are sparse and distinct riblets. The slit is short and coarse, though not large; and from it a broad round ridge trending to the right runs out to the margin. *Sculpture:* The riblets are neither strong nor sharp; but they are distinct, rising as little round threads from the flat surface, and being parted by broad intervals, rather strongly pitted by the little specks of the genus; the ridge which runs down the front of the shell is the full breadth of the slit; the concentric striæ are mere slight irregular lines of growth. *Colour* clouded, porcellanous white under the brownish caducous epidermis. *Apex* very much curled in and bent down, but not spread out on the backward slope; the minute extreme tip is exserted and projects; the whorls are 2¼. *Slit:* The open part is short and narrowly oblong, and as broad in front as behind, from which point the old scar runs up the crest. *Margin* thin, patulous, especially behind, crenulated by the riblets. *Inside* porcellanous, deeply hollowed into the apex; scored by the rib-furrows, of which the one in front is very strong, particularly near the slit, which is rather closely covered by the strong, slightly arched septum, which has a retracted edge and is unbuttressed. L. 0·18 in. B. 0·12. H. 0·1.

In the animal the eye-peduncles are present; but no eyes are visible. The pedal papillæ are very small, as is also the funnel-shaped process leading to the shell-slit.

This species in general form is a good deal like *Puncturella agger*, but is more tumid and higher; the apex and sculpture are very dissimilar. Than *Puncturella conica*, D'Orb. (*Rimula*), which is much of the same size, *Puncturella brychia* has the apex much more turned over; the form is broader and much more depressed.

[1] βρύχιος, deep sea.

4. *Puncturella*, n. sp. (?).

September 7, 1874. Torres Strait. North of Australia. 3 to 11 fathoms.

September 8, 1874. Flinders Passage, Torres Strait, North of Australia. 7 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Torres Strait, North of Australia. 8 fathoms. Coral mud.

Station 187. September 8, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Cape York, Torres Strait, North of Australia. 6 fathoms. Coral Mud.

This species, probably new, is peculiar from its high, perpendicular, roundly oval form, ending in a minute reverted, hardly in-curled, prominent tip which overhangs the base; the longitudinal striation consists rather of corrugations than ribs; and the lines of growth are slight and unequal. The slit, which is small and oval, arises simply from the removal of the crest. The inside is corrugated like the outside, the opening runs up and backwards into the apex; the septum, which is flatly arched, lies very close to the front wall of the shell and comes far down.

The species is not described, because none of the specimens are in very good condition. They are also all very small; but the species is probably a small one, judging from the minute size of the embryonic shell. Coming from a locality visited and carefully dredged by the "Chevert" Expedition, the species might be expected in the lists of that expedition given in the New South Wales Linn. Soc. Proc., 1876–78. I have failed to find it there; but some other explorer of that difficult record may be more successful.

5. *Puncturella noachina* (Linne).

Patella noachina, Linne, Mant. Plant., p. 551.
„ „ Chemnitz, Conch. Cab., vol. xi. p. 186, pl. cxcvii. figs. 1927, 1928.
Fissurella noachina, Lamarck, Anim. s. vert. (ed. Desh.), vol. vii. p. 604, sp. 30.
Puncturella noachina, Lowe, Zool. Journ., vol. iii. p. 78, Jan. 1827.
Cemoria princeps, Mighels, Proc. Bost. Soc. Nat. Hist., 1841, vol. i. p. 49.
„ „ Mighels, Bost. Journ. Nat. Hist., vol. iv. p. 2, pl. iv. fig. 9.
Rimula galeata, Gould, Otia Conch., p. 14.
Cemoria galeata, Gould, Otia Conch., p. 243.
Rimula galeata, Gould, U.S. Exploring Exped. (Wilkes), Shells, p. 369, pl. xxxi. figs. 476, 477.
Puncturella noachina, Searles Wood, Crag. Moll., vol. i. p. 166, pl. xviii. fig. 5.
„ „ Forbes and Hanley, vol. ii. p. 474, pl. lxii. figs. 10–12 and pl. BB figs. 4–6.
Patella noachina, Hanley, Ipsa Linn. Conch., pp. 456 and 556.
Cemoria noachina, Sowerby, Thes. Conch., vol. iii. pt. 22, p. 207, sp. 1, pl. ccxlv. (*gen.* x.) figs. 10, 11.
„ *galeata*, Sowerby, Thes. Conch., vol. iii. pt. 22, p. 207, sp. 2, pl. ccxlv. (*gen.* x.) fig. 12.
Puncturella galeata, Carpenter, Rep. Brit. Assoc., 1863, Moll. W. Coast North America, pp. 320, 651.
„ *noachina*, Binney's Gould, Invertebrata of Mass., p. 276, f. 537.
Cemoria noachina, Reeve, Conch. Icon., vol. xix. pl. i. fig. 7.
„ *galeata*, Reeve, Conch. Icon., vol. xix. pl. i. fig. 1.
Puncturella noachina, Jeffreys, Brit. Conch., vol. iii. p. 257, pl. vi. fig. 2, vol. v. p. 200, pl. lix. fig. 1.

Puncturella noachina, Jeffreys, Journ. Linn. Soc. Lond., 1878, vol. xiv. p. 422.
" " Sars, Moll. Arct. Norv., p. 124, No. 21, pl. iii. fig. 3 (*radula*).
" " Seguenza, Form. Terz. Calabria, p. 273.
" " Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1882, p. 676, No. 2.
Rimula noachina, Leche, Novaja Semlja o. Jenissei Hafs-Moll., pp. 40, 79, 82.

Station 144A. December 26, 1873. Lat. 46° 48′ S., long. 37° 49′ 30″ E. Off Marion Island. 69 fathoms. Volcanic sand. (Var. *princeps*, Migh.)

Station 145. December 27, 1873. Lat. 46° 43′ S., long. 38°. 4′ 30″ E. Between Marion Island and Prince Edward Island. 140 fathoms. Volcanic sand. (Var. *princeps*, Migh.)

Station 145A. December 27, 1873. Lat. 46° 41′ S., long. 38° 10′ E. Off Prince Edward Island. 310 fathoms. Volcanic sand. (Var. *princeps*, Migh.)

Station 149C. January 19, 1874. Lat. 49° 32′ S., long. 70° E. Balfour Bay, Royal Sound, Kerguelen. 60 fathoms. Volcanic mud. (Var. *princeps*, Migh.)

Station 312. January 13, 1876. Lat. 53° 37′ 30″ S., long. 70° 56′ W. Port Famine, Strait of Magellan. Blue mud. (Var. *galeata*, Gd.)

Habitat.—The North Atlantic, from North Greenland (Torell) to Cape Cod on the W. (Gould), and from Scarborough in England to Spitzbergen and Nova Zembla (Leche), to the Sea of Okhotsk, Northern Japan, and Corea (Jeffr.) Dredged by the "Lightning" Expedition off the Færœs in 189 fathoms; by the "Porcupine" Expedition in from 73 to 1095 fathoms (Jeffr.); by the Swedish Expedition off Nova Zembla in from 5 to 150 fathoms. *Puncturella galeata* is from Puget Sound, Oregon.

Fossil: From the Miocene? (Jeffr.) in Sicily, and from the Pliocene onwards in Calabria (Seguenza), England, Scotland, Sweden and Norway, Labrador (Jeffr.), Nova Zembla (Leche).

After careful study, I have found it impossible to separate the Southern form, which is unquestionably the *Puncturella princeps*, from the species of Linne. Mighels, in publishing *Puncturella princeps*, says that it differs from *Puncturella noachina*, Linne, in that the latter has the ribs more elevated (these in *Puncturella princeps* being slight and obtuse), the corresponding interior sulci much more obvious, the posterior slope much and regularly curved (while in *Puncturella princeps* it is subrectilinear); shell smaller, proportionately longer, not so high; interior arch without wings; while in *Puncturella princeps* the flattened arch which covers the cleft is strengthened by a plate uniting it with the sides of the shell. All these are variable features. Carpenter (*loc. cit.*) says of *Puncturella galeata* that "it scarcely differs from *noachina*, but tripartite process more strongly marked." My own examination of the British Museum specimens convinced me of their identity with *Puncturella noachina*, Linne. Mr E. A. Smith kindly examined them anew for me, and writes (July 21, 1882): "My opinion agrees with Carpenter's. . . . Judging from our two specimens of *Puncturella galeata*, the pits on each side of the fissure seen within are certainly deeper than in

noachina. The shell is rather thicker, so that the edge of the aperture appears a little expanded. ('*Margine expanso*,' Gould). The sculpture seems about the same in both." The points of distinction here adverted to by Mr Smith are points in which *Puncturella noachina* presents enormous variations. I have two specimens from the Lofotens, sent by Professor G. O. Sars, which present these precise features exactly as they appear in *Puncturella galeata*, Gd. In regard to several other species of *Puncturella*, I have little doubt they belong to *Puncturella noachina*, and in particular *Puncturella* (*Cemoria*) *falklandica*, A. Ad. (Sowerby, Thes. Conch., pt. 22, p. 208, sp. 7, pl. x. fig. 14, and Reeve, Conch. Icon., vol. xix. pl. i. fig. 8), ought to be so classed. Distance between the ribs and equality of breadth before and behind, which are the features referred to for distinguishing the species, are too variable to be relied on for this purpose. *Puncturella cooperi*, Carp., is a species I do not know, but Dr Carpenter (*loc. cit. supra*) says of it, "Outside like *Puncturella galeata*, Gd., but without props to the lamina." This is an entirely variable feature in *Puncturella noachina*, Linne, and cannot therefore be accepted as a specific distinction.

6. *Puncturella oxia*,[1] Watson (Pl. IV. fig. 8).

Puncturella oxia, Watson, Prelim. Report, pt. 16, Journ. Linn. Soc. Lond., vol. xvii. p. 36, sp. 8.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Very small, thin, oval, narrowed in front, depressed; its slopes are straight at the sides, slightly and regularly convex in front; merely the extreme tip is curled in, and the top projects sharply upwards and backwards immediately in front of the break of the slit; the surface is closely dotted with minute tubercles; the slit is rather large and round. *Sculpture:* There are neither ribs nor concentric lines, but the surface is pretty closely dotted over with minute rough tubercles, which are arranged in somewhat interrupted and irregular zigzags. *Colour* translucent, and at the tubercles transparent. *Apex* incurved and turned back, but not bent down; there are two whorls. *Slit:* There is a largish round hole obliquely cut off from the top, and prolonged backwards into a point. *Margin* very thin, patulous, not crimped. *Inside* glassy; a very small hollow runs up into the apex; the surface is scored with many irregular, minute scratch-like white threads, which are more perceptible on a slightly worn than on a fresh specimen; there is no anterior furrow; the slit, as seen from within, is round, and is very little interfered with by the short, thin, triangular, straight-edged, almost perpendicular septum. L. 0·14 in. B. 0·1. H. 0·07.

This species has some features of resemblance to *Puncturella profundi*, Jeffr., but is flatter, and in sculpture is quite different.

[1] ὀξύς, sharp.

7. *Puncturella sportella*, Watson (Pl. IV. fig. 9).

Puncturella sportella, Watson, Prelim. Report, pt. 16, Journ. Linn. Soc. Lond., vol. xvii. p. 37, sp. 9.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Very small, strongish, oblong, with straight slopes before and at the sides, and markedly concave behind; the apex is very small, and it alone projects backwards; the surface is finely cancellated; the slit is lozenge-shaped. *Sculpture:* There are very many slightly irregular, coarsish, radiating riblets crossed by concentric threadlets, which are rather finer and closer but somewhat more irregular, and which form minute knots in crossing the riblets; from this sculpture results the basket-work appearance from which the name of the species has been adopted. *Colour* white, with a faint tinge of ruddiness. *Apex* is exceedingly minute; and it is the little embryonic spiral alone which projects; the entire number of whorls is only $1\frac{3}{4}$. *Slit* roundish, but acute in front, and drawn out behind (where it is closed by the septum) into a sharp point so as to be lozenge-shaped when viewed in its entire length. *Margin* straight on the sides, scarce appreciably broader behind than before; the edge is bevelled off so as to be quite sharp. *Inside* glassy; feebly marked with the ribs, which, as well as the concentric threads, shine through as transparent; the opening up into the apex is narrow and deep, but not pointed; there is no anterior furrow; the slit, as seen from within, is roundish, pointed in front, and truncated behind by the short, thin, triangular, straight-edged, little-oblique septum. L. 0·12 in. B. 0·08. H. 0·06.

This beautiful species is not improbably full grown, the very small apex seeming to indicate that the species is in its own nature minute. In outline it somewhat resembles *Puncturella granulata*, Seg.; in sculpture it has relations with *Puncturella asturiana*, Fisch., and *Puncturella profundi*, Jeffr.; in both respects it may be compared with *Puncturella clathrata*, Jeffr., but is unlike them all, and may be readily recognised by its minute apex.

8. *Puncturella* (*Cranopsis*) *asturiana* (Fischer) (Pl. IV. fig. 4).

Rimula asturiana, Fischer, Jour. de Conch., 1882, p. 51.
Puncturella (*Cranopsis*) *asturiana*, Watson, Journ. Linn. Soc. Zool., vol. xvii. p. 29, sp. 1.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—Bay of Biscay. 600 to 1100 fathoms.

Shell.—Grey, thin, depressed, oval, considerably broader in front than behind; with straight conical sides, convex in front and concave behind, where in particular the margin is a little patulous: it is scored with sharpish ribs and concentric

threads; the lanceolate slit is large and very low placed. *Sculpture:* From the point 30 to 40 sharpish ribs radiate out, in whose interstices as they diverge smaller ones appear, which finally rival the first, so that toward the margin 100 to 130 can be counted. The one in continuation of the generic puncture is slightly raised, double, and partially split, especially above, giving the impression of a suture; these are crossed by concentric threads of almost equal strength with the ribs, in crossing which they rise into knots which sharply roughen the surface. *Colour* brownish-grey; but the specimen is somewhat blackened and discoloured.[1] *Apex* a good deal depressed, curled in, and projected backwards exactly in the middle line of the shell, the minute tip just standing out on the right, forming a spire of $2\frac{1}{4}$ whorls. *Slit* very low, having its centre quite two-thirds down the front slope; it is lanceolate, square behind, broadening, a little irregularly, in the middle, and slowly contracting to a small narrow point in front. The old scar is a shallow furrow with sharp sides; and the bottom is scored across with old edge-lines. *Margin* thin, toothed, and crimped on the edges by the ribs. *Inside* porcellanous, somewhat indented on the line of the ribs. The apex is deeply hollowed; a deepening and widening grove extends from the margin to the slit, which is shortly covered by the regularly-curved, strong, unbuttressed septum. L. 0·8 in. B. 0·62. H. 0·32.

This North Atlantic species is exceptionally large. In outline it somewhat resembles *Rimula cognata*, Gould. My remembrance of that species is that it is quite small; but Gould figures it large, and gives no indication of size beyond saying that it is small. *Puncturella asturiana* further differs from it in being much rounder and lower, with a more depressed and reverted apex, and a slit much more remote from the top.

9. *Puncturella* (*Cranopsis*) *granulata*[2] (Seguenza) (Pl. IV. fig. 5).

Rimula granulata, Seguenza, Pal. Malac. d. Terreni Terz. di Messina, *Fissurellidi*, p. 14, pl. v. fig. 6.
Puncturella (*Cranopsis*) *granulata*, Watson, Journ. Linn. Soc. Zool., vol. xvii. p. 31, sp. 2.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Fossil.—From the Miocene marls of Rometta, near Messina.

Shell.—Porcellanous white under a meagre yellow epidermis, rather thin, narrow, broader in front, oblong, with a depressed and reverted top and incurved apex; the side slopes are steep and slightly convex, the front edge is long and very convex, the back

[1] The colour of living specimens from the Bay of Biscay proves to be very much the same.
[2] Not *Fissurisepta granulosa*, Jeffr.

slope is concave in consequence of the overhanging apex; the small close-set radiating ribs are beaded with contiguous small rough tubercles; the long narrow fusiform slit rises very high, and is remote from both apex and margin. *Sculpture:* From the apex over 100 small irregular and unequal riblets radiate to the margin; they are closely beset with small rough tubercles like beads; there are no concentric threads, but a few unequal lines of growth can be seen; the riblet which runs from the slit is double, with a minute furrow between the riblets; its direction is not quite constant in different specimens. *Colour:* The shell is pure white, porcellanous under the thin straw-yellow membranaceous epidermis, which is rather caducous. *Apex* very much reverted and depressed so as to stick out backwards bluntly, but prominently in the mid-line of the shell; the minute smooth white tip stands out on the right with considerable distinctness, completing a regular spire of $2\frac{1}{2}$ whorls in all. *Slit* stands very high, its upper end rising to the crest of the shell, though still remote from the apex; it is long, narrow, and deep, and tapers off at both ends; the old scar is deep and narrow. *Margin* thin and sharp, toothed all round, but hardly crimped within; behind it is very patulous, but elsewhere the internal slope is very steep; the two sides are very straight and converge backwards. *Inside* porcellanous, deeply hollowed into the apex; a sharp little furrow that resembles a crack runs up from the margin to the slit, which is almost quite covered in all its length by the patulous but small and flatly arched unbuttressed septum. L. 0·31 in. B. 0·19. H. 0·15.

This species is peculiarly long and narrow, and roomy within from its steep walls and blunt apex. Its sculpture, too, is very striking.

10. *Puncturella* (*Cranopsis*) *profundi*, Jeffreys.

Puncturella profundi, Gwyn Jeffreys, "Valorous" Moll., Ann. and Mag. Nat. Hist., ser. 4, vol. xix., 1877, p. 232.
" " Gwyn Jeffreys, Presid. Address, Brit. Assoc. Biolog. Sec., 1877, p. 3.
" " Gwyn Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., Nov. 14, 1882, p. 675, pl. l. fig. 10.
" (*Cranopsis*) *profundi*, Watson, Journ. Linn. Soc. (Zool.), Nov. 16, 1882, vol. xvii. p. 35, sp. 7.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—North Atlantic. 740 to 1750 fathoms.

Shell.—Small, thin, roundly oval; the front slope is slightly convex, the others still more slightly concave; the top, of which merely the extreme tip is incurled, projects upwards and a little backwards in a point which is sharpened by the crater-like hole of the slit close in front; minute riblets closely beaded score the surface; the slit is large and round. *Sculpture:* There are very many radiating riblets, which are sharp and distinct

but very minute; the surface is also delicately fretted with fine concentric undulations, which in crossing the riblets rise into sharp little contiguous tubercles, but in the narrow intervals are almost invisible. *Colour* frosted glassy-white. *Apex* fine, sharp, prominent, projecting upwards and backwards, with only the extreme tip (which is very small) incurled and slightly turned round; there are fully two whorls. *Slit* is a largish round hole with a pointed prolongation backwards; it lies close in front of the tip, and cuts away the natural top of the shell. *Margin* excessively thin, patulous all round, not crimped. *Inside* glassy; a very small hollow runs into the apex; the lines of the outside ribs are just perceptible; there is no anterior furrow; the slit, as seen from within, is round, and is very little interfered with by the short, thin, triangular, straight-edged, little-oblique septum. L. 0·21 in. B. 0·16. H. 0·14.

It was with very great hesitation I united the Challenger specimens to this species; and in my paper to the Linnean Society (*loc. cit.*) I mentioned various points of distinction between the forms. Even there, however, I suggested that a fuller series of specimens than I had seen at the time I wrote might supply connecting links between them. This actually proved to be the case, so enabling me—though only at the very last moment, and after my paper was in print—to suppress the name I had chosen for the species, and to adopt that of the late Dr Gwyn Jeffreys.

11. *Puncturella* (*Fissurisepta*) *rostrata* (Seguenza) (Pl. IV. fig. 10).

Fissurisepta rostrata, Seguenza, Palæo. Malac. Terr. Terz. di Messina, p. 10, pl. v. f. 3.
Puncturella (*Fissurisepta*) *rostrata*, Watson, Journ. Linn. Soc. Lond., vol. xvii. p. 38, sp. 10.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Fossil.—From the Upper Miocene, Trapani, Sicily.

Shell.—Very small, thin and high, ovate, with slightly impressed sides, glassy, dotted in regular oblique-curving lines, with high, blunt, minute glassy tubercles; the side slopes are high and straight, the front edge faintly convex, the back slope slightly concave; there is no embryonic apex; and the slit is a round hole parallel to the base. *Sculpture:* The surface of the shell is glassy, but is dotted with minute tubercles which are generally parted by more than their own diameter, and run in very regular oblique sweeps parallel to one another. *Colour* transparently glassy, the tubercles being dead white. *Apex* none, the top being slightly bent back and the entire tip removed. *Slit:* a small round hole on the very top, with slightly irregular sides. *Margin* very thin; the sides are almost straight or a little bent in, and the breadth is very slightly greater behind than before. *Inside* quite glassy; there is no anterior furrow, and the straight concave-edged septum runs far down the shell parallel and very near to the posterior wall, thus cutting off a long sheath-like process. L. 0·13 in. B. 0·08. H. 0·12.

This is a most exceptional and peculiar little species, quite unlike any other.

In Professor Seguenza's figure the little rounded tubercles which stud the glossy surface of the shell are arranged in regular horizontal and less regular vertical rows; but in all the specimens I have seen, kindly sent me by Professor Seguenza, they arrange themselves transversely. In the Challenger specimen these tubercles are much more numerous and smaller, and are horizontally oblong, not round as in the fossil shell. Professor Seguenza (*loc. cit.*) refers to "due solchette laterali, superficiali poco distinti," which run downwards and forwards from the top on the line of attachment of the internal septum. Of these there is barely a trace in the Challenger specimen.

Family HALIOTIDÆ, Flem., 1828.

Genus *Haliotis*, Linne, 1758.

Species.

1. *Haliotis nævosa*, Martyn. 2. *Haliotis varia*, Linne.

1. *Haliotis nævosa*, Martyn.

Haliotis nævosa, Martyn, Univ. Conch., vol. ii. f. 63.
" *tubifera*, Encyclop. méthod., vol. ii. (pt. 2), p. 179, No. 3 (in part).
" *nævosa*, Lamarck, Anim. s. vert. (ed. Desh.), vol. ix. p. 34, No. 20.
" " Reeve, Conch. Icon., vol. iii. pl. viii. fig. 27a, and pl. ix. fig. 27b and c.
" " Sowerby, Thes. Conch., pts. 37, 38, p. 31, No. 59, pl. ccccxxxiii. (*Gen.* vi.) fig. 39, pl. ccccxxxvii. (*Gen.* x.) fig. 73.
" " Angas, South Austr. Moll., Proc. Zool. Soc. Lond., 1865, p. 183, No. 178.
" " Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 218, No. 203.
" " Weinkauff, Conch. Cab. (ed. Küster), p. 34, pl. xiv. figs. 1–3.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
April 23, 1874. Port Jackson, Sydney. 6 to 15 fathoms.

Habitat.—Australia (British Museum), Port Jackson (Angas).

2. *Haliotis varia*, Linne. (See Appendix, No. 1.)

Family TROCHIDÆ, D'Orb, 1837.

Genera. 1. *Trochus*, Linne. 2. *Gaza*, Wats. 3. *Bembix*, Wats. 4. *Basilissa*, Wats. 5. *Seguenzia*, Jeffr. 6. *Stomatella*, Lam. 7. *Scissurella*, D'Orb. 8. *Schismope*, Jeffr. 9. *Homalogyra*, Jeffr. 10. *Cyclostrema*, Marryat. 11. *Phasianella*, Lam. 12. *Turbo*, Linn.

1. *Trochus*, Linne, 1758.

Species.

1. *Trochus niloticus*, Linne.
2. *Trochus* (*Clanculus*) *clangulus*, Wood.
3. *Trochus* (*Clanculus*) *homalomphalus*, Wood.
4. *Trochus* (*Clanculus*) *maugeri*, Wood.
5. *Trochus* (*Clanculus*) *floridus*, Philippi.
6. *Trochus* (*Euchelus*) *atratus* (Gmel.)
7. *Trochus* (*Euchelus*) *baccatus* (Menke).
8. *Trochus* (*Euchelus*) *dunkeri*, Koch.
9. *Trochus* (*Monodonta*) *labio*, Linne.
10. *Trochus* (*Ziziphinus*) *decoratus*, Phil.
11. *Trochus* (*Ziziphinus*) *exasperatus*, Pennt.
12. *Trochus* (*Ziziphinus*) *similaris*, Reeve.

13. *Trochus* (*Ziziphinus*) *striatus*, Linne.
14. *Trochus* (*Ziziphinus*) *zizyphinus*, Linne.
15. *Trochus* (*Ziziphinus*) *arruensis*, Wats.
16. *Trochus* (*Ziziphinus*) *stephanephorus*, n. sp.
17. *Trochus* (*Ziziphinus*) *stirophorus*, Wats.
18. *Trochus* (*Ziziphinus*) *tiara*, Wats.
19. *Trochus* (*Ziziphinus*) *transenna*, Wats.
20. *Trochus* (*Ziziphinus*) *tinctus*, n. sp.
21. *Trochus* (*Elenchus*) *badius*, Wood.
22. *Trochus* (*Bankivia*) *fasciatus* (Menke).
23. *Trochus* (*Leiopyrga*) *picturatus* (H. and A. Ad.)
24. *Trochus* (*Trochocochlea*) *colubrinus*, Gd.
25. *Trochus* (*Trochocochlea*) *fuligineus* (A. Ad.)
26. *Trochus* (*Diloma*) *porcifer* (A. Ad.)
27. *Trochus* (*Oxystele*) *euspira* (Dall).
28. *Trochus* (*Photinula*) *cærulescens* (King).
29. *Trochus* (*Photinula*) *tæniatus* (Sow.)
30. *Trochus* (*Photinula*) *expansus* (Sow.)
31. *Trochus* (*Chlorostoma*) *ater*, Lesson.
32. *Trochus* (*Chlorostoma*) *xanthostigma* (A. Ad.)
33. *Trochus* (*Omphalius*) *hotessierianus*, D'Orb.
34. *Trochus* (*Monilea*) *benzi*, Krauss.
35. *Trochus* (*Monilea*) *belcheri*, Phil.
36. *Trochus* (*Solariella*) *prodictus*, Fischer.
37. *Trochus* (*Solariella*) *vitiligineus*, Menke.
38. *Trochus* (*Solariella*) *philippensis*, Wats.
39. *Trochus* (*Solariella*) *lamprus*, Wats.
40. *Trochus* (*Solariella*) *albugo*, Wats.
41. *Trochus* (*Gibbula*) *glyptus*, Wats.
42. *Trochus* (*Gibbula*) *zonatus*, Wood.
43. *Trochus* (*Margarita*) *brychius*, Wats.
44. *Trochus* (*Margarita*) *charopus*, Wats.
45. *Trochus* (*Margarita*) *pompholugotus*, Wats.
46. *Trochus* (*Margarita*) *rhina*, Wats.
47. *Trochus* (*Margarita*) *æglëes*, Wats.
48. *Trochus* (*Margarita*) *clavatus*, Wats.
49. *Trochus* (*Margarita*) *rhysus*, Wats.
50. *Trochus* (*Margarita*) *infundibulum*, Wats.
51. *Trochus* (*Margarita*) *illotus*, n. sp.
52. *Trochus* (*Margarita*) *pachychiles*, Wats.
53. *Trochus* (*Margarita*) *azorensis*, Wats.
54. *Trochus* (*Margarita*) *dnopherus*, Wats.
55. *Trochus* (*Margarita*) *streptophorus*, n. sp.
56. *Trochus* (*Margarita ?*) *scintillans*, Wats.
57. *Trochus* (*Margarita*) *cancellatus*, Jeffr.
58. *Trochus* (*Chrysostoma*) *paradoxus* (Born).

1. *Trochus niloticus*, Linne.

Trochus niloticus, Linne, Syst. Nat., 12th ed., p. 1227, No. 579.
Chemnitz, Conch. Cab., vol. v. p. 76, pl. clxvii. figs. 1605–1607 and pl. clxviii. fig. 1614.
„ „ Encyclop. méthod., pl. cxliv. fig. 1, and Deshayes in vol. iii. p. 1072, sp. 11.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 17, and (ed. Desh.) vol. ix. p. 132, sp. 25.
„ „ Dillwyn, Cat., vol. ii. p. 760, sp. 1.
„ „ Wood, Ind. Test. (ed. Hanley), p. 139, pl. xxviii. fig. 1.
„ „ Quoy and Gaimard, "Astrolabe," vol. iii. p. 243, pl. lxii. fig. 12.
„ „ Philippi, Conch. Cab. (ed. Küster), p. 32, sp. 32, pl. vii. fig. 1, pl. viii. fig. 1.
„ „ Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 150, sp. 1.
„ „ Hanley, Ipsa Linn. Conch., pp. 312 and 527.
„ „ Adams, Genera, vol. i. p. 412, pl. xlvi. fig. 7.
„ „ Lischke, Japan. Meer. Conch., vol. i. p. 91, vol. ii. p. 84.
„ „ v. Martens, Moll. Mauritius, &c., p. 294.
„ „ Fischer in Kiener's Iconog., p. 66, sp. 2, pl. x.
„ „ Brazier, "Chevert" Moll., Proc. Linn. Soc. New South Wales, vol. ii. p. 42, No. 3.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Indian Ocean (v. Mart.), New Ireland (Quoy and Gaimard), Tranquebar, Amboina, Upolu (Fischer), North Australia (Brazier).

The reference to Reeve (Conch. Icon., vol. xiii. pl. i. fig. 3) is omitted here, as the species he has there figured under this name is *Trochus maximus*, Koch.

2. *Trochus* (*Clanculus*) *clangulus*, Wood.

Trochus clangulus, Wood, 1828, Ind. Test. Suppl. (ed. Hanley), p. 221, pl. v. fig. 31.
" " Philippi in Conch. Cab. (ed. Küster), p. 239, sp. 304, pl. xxxvi. fig. 8.
Trochus floridus, Philippi in Menke's Zeitschr., 1849, p. 156, and in Conch. Cab. (ed Küster), p. 243, pl. 36, fig. 15.
Clanculus floridus, A. Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 158, sp. 5.
Trochus clangulus, Fischer in Kiener's Iconog., p. 234, No. 123, pl. lxxxi. fig, 1.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
May 1874. Port Jackson, Sydney. 6 to 7 fathoms.

Habitat.—Australia, New South Wales (Fischer), Tasmania (Brit. Mus.)

That this species, which is conical, fairly angulated, and has a pervious umbilicus, should be classed by Adams as a *Clanculus*, of which he says in his diagnosis that the "shell is conoidal or turbinate, axis imperforate" while the "columella forms a false umbilicus," is a fact somewhat striking, but far from unexampled in the history of generic subdivision. For myself, I simply quote Adams here as elsewhere for these sub-genera, leaving the responsibility of them on those who admire them. Dr Fischer quotes Mr Angas as having supplied him with numerous specimens of this species from New South Wales, but I have failed to find the species in any of that author's Australian lists.

3. *Trochus* (*Clanculus*) *homalomphalus*, A. Adams.

Clanculus homalomphalus, A. Ad., Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 162, sp. 44.
" " Adams, Genera, vol. i. p. 416.
" " Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 214, No. 178.
Trochus homalomphalus, Fischer in Kiener's Iconog., p. 235, sp. 124, pl. lxxxi. fig. 2.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
April 23, 1874. Port Jackson, Sydney. 6 to 15 fathoms.
May 1874. Port Jackson, Sydney. 6 to 7 fathoms.

Habitat.—Port Jackson, Sydney (Angas).

The spelling of this name as given by Fischer probably represents what Adams meant to convey, viz., the smoothness of the umbilicus, a feature one would hardly expect in a genus defined by the Messrs Adams (see Genera, vol. i. p. 415) as having the "axis imperforate" and the columella "forming a false umbilicus with a crenate margin." The periphery, too, so far from being rounded, is very sharply angulated, and the shell is distinctly conical. In this and other cases I simply follow the classification, which some persons seem to find useful, however little so it seems to myself.

4. *Trochus* (*Clanculus*) *maugeri*, Wood.

Trochus Maugeri, Wood, Ind. Test. Suppl. (ed. Hanley), p. 220, pl. v. fig. 27.
" " Philippi in Conch. Cab. (ed. Küster), p. 240, sp. 305, pl. xxxvi. fig. 9.
Clanculus Maugeri, A. Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 158, sp. 4.
" " Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 214, No. 176.
Trochus Maugeri, Fischer in Kiener's Iconog., p. 218, sp. 113, pl. lxxii. fig. 1.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Port Jackson (Angas).

This species is generally assigned to the sub-genus *Clanculus*, and there accordingly I leave it, but it is conical in form instead of being conoidal, and angulated at the base instead of being rounded.

5. *Trochus* (*Clanculus*) *floridus*, Philippi.

Trochus floridus, Philippi, Conch. Cab. (ed. Küster), 1846, p. 243, sp. 309, pl. xxxvi. fig. 15.
„ „ Philippi, Zeitschr. f. Malacologie, 1849, p. 156.
Clanculus gibbosus, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 162, sp. 45.
„ „ Angas, South Austr. Moll., Proc. Zool. Soc. Lond., 1865, p. 178, No. 143.
Trochus floridus, Fischer in Kiener's Iconog., p. 237, sp. 125, pl. lxxxi. fig. 3.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—South Australia, Port Jackson (Angas), New Ireland (Adams).

This is a species excessively like *Trochus* (*Clanculus*) *clanculus*, Wood, but that species is higher and more conical, with less convex whorls, and the suture not depressed as here. The colour, sculpture, and mouth, too, are all slightly different. One would be very apt to overlook these differences, but when once noticed they are striking.

6. *Trochus* (*Euchelus*) *atratus* (Gmelin).

Chemnitz, Conch. Cab., vol. v. p. 172, pl. clxxvii. figs. 1754–55.
Turbo atratus, Gmelin, Syst. Nat., 13th ed., p. 3601, sp. 53.
„ „ Dillwyn, Cat., vol. ii. p. 845, sp. 71.
Monodonta canaliculata, Lamarck, Anim. s. vert., vol. vii. p. 37, and (ed. Desh.) vol. ix. p. 181, sp. 20.
„ „ Delessert, Recueil, pl. xxxvii. fig. 1.
Trochus canaliculatus, Quoy and Gaimard, "Astrolabe," vol. iii. p. 261, pl. lxiv. figs. 21–25.
„ *atratus*, Philippi, Conch. Cab. (ed. Küster), p. 174, pl. xxvii. fig. 14.
Monodonta atrata, A. Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 174, sp. 6.
Turbo atratus (*Trochus*), Wood, Ind. Test. (ed. Hanley), p. 154, pl. xxxi. fig. 72.
Euchelus denigratus, Adams, Genera, vol. i. p. 418, pl. xlvi. fig. 6.
„ *canaliculatus*, Chenu, Man. Conch., vol. i. p. 358, fig. 2656.
Trochus atratus, Fischer in Kiener's Iconog., p. 293, sp. 166, pl. xciv. fig. 3.
„ (*Euchelus*) *atratus*, E. A. Smith, "Alert" Collections, p. 74, No. 97.

September 8, 1874. Flinder's Passage, Cape York, North-Eastern Australia. 7 fathoms.
September 8, 1874. Off Albany Island, Cape York. 3 to 12 fathoms.
Station 208. January 17, 1875. Lat. 11° 37′ N., lon. 123° 31′ E. Philippines. 18 fathoms. Blue mud.

Habitat.—Nicobar Islands (Chemnitz), Vanikoro and Tongatabu (Quoy and Gaimard), Fiji, Moluccas, Sorong (Fischer), Ticao (Adams), North-Eastern Australia (British Museum).

7. *Trochus* (*Euchelus*) *baccatus* (Menke).

Monodonta baccata, Menke, Moll. Nov. Holl., p. 14, No. 51.
Trochus aspersus, Koch, Zeitschr. f. Malak., 1846, p. 103, No. 23.
„ *baccatus*, Philippi in Conch. Cab. (ed. Küster), p. 173, sp. 208, pl. xxvii. fig. 13.
Monodonta baccata, Adams, Proc. Zool. Soc. Lond., 1851, p. 174, sp. 9.
Euchelus baccatus, Angas, South Austr. Moll., Proc. Zool. Soc. Lond., 1865, p. 179, No. 147.
„ „ Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 215, No. 180.
Trochus baccatus, Fischer in Kiener's Iconog., p. 292, pl. xciv. fig. 2, and pl. cxv. fig. 1.

May 1874. Port Jackson, Sydney. 6 to 7 fathoms.

Habitat.—Southern and Eastern Australia (Angas), and the Solomon Islands (Fischer), and Singapore (British Museum).

8. *Trochus* (*Euchelus*) *dunkeri*, Koch.

Trochus (*Monodonta*) *dunkeri*, Koch in Philippi, Abb. und Besch., vol. i. p. 67, sp. 5, pl. xvi. (Gen. ii.) fig. 5.
„ *dunkeri*, Philippi, Conch. Cab. (ed. Küster), p. 237, sp. 300, pl. xxxvi. fig. 5.
Monodonta dunkeri, A. Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 174, sp. 10.
Euchelus dunkeri, Adams, Genera, vol. i. p. 19.
Trochus dunkeri, Fischer in Kiener's Iconog., p. 301, sp. 171, pl. xcvi. fig. 2.

Station 161. April 1, 1874. Lat. 38° 22′ 30″ S., long. 144° 36′ 30″ E. Off entrance to Port Philip, Melbourne, Australia. 33 fathoms. Sand.

Habitat.—Port Adelaide, South Australia (Phil.)

The single specimen here is young and far from fresh, but is, I feel sure, this species.

9. *Trochus* (*Monodonta*) *labio*, Linne.

Trochus labio, Linne, Syst. Nat., 10th ed., p. 759, No. 516 (not 12th ed., p. 1230, No. 595, which teste Phil. *loc. cit. infra* = *Trochus turbinatus*, Born).
Le rétan, Adanson, Sénégal, p. 181, pl. xii. fig. 2.
Trochus labeo, Chemnitz, Conch. Cab., vol. v. p. 60, pl. clxvi. figs. 1579 to 1581.
„ „ Wood, Ind. Test. (ed. Hanley), p. 145, sp. xxix. fig. 80.
Monodonta labio, Encyclop. méthod., vol. iii. p. 1080, No. 30, pl. cccexlvii. figs. 1–2.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 34, and (ed. Desh.) vol. ix. p. 176, No. 10.
Trochus labeo, Dillwyn, Cat., vol. ii. p. 792, sp. 80.
„ *labio*, Philippi, Conch. Cab. (ed. Küster), pp. 166 and 306, pl. xxvii. figs. 1–3, and pl. xliv. fig. 8.
„ (*labio*) *labio*, Krauss, Südafrik. Moll., p. 100, sp. 21.
Monodonta labio, Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 173, sp. 1.
Trochus labio, Hanley, Ipsa Linn. Conch., pp. 320, 529.
„ „ Lischke, Japan. Meeres Conch., vol. i. p. 95, vol. ii. p. 87.

Monodonta labio, Tapparone-Canefri, "Magenta" Malacologia, p. 61.
Trochus (monodonta) labio, von Martens, Moll. Mauritius, &c., p. 296.
„ *labio*, Fischer in Kiener's Iconog., p. 223, sp. 116, pl. lxxiii. fig. 1, and pl. lxxiv. fig. 4.
Monodonta labio, Brazier, "Chevert" Moll., Proc. Linn. Soc. New South Wales, vol. ii. p. 43, No. 9.
Trochus (monodonta) labio, E. A. Smith, "Alert" Collections, p. 74, No. 94, and p. 505, No. 93.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Near Cape York, North Australia. 6 fathoms. Coral mud.
May 14, 1875. Oosima, Japan.

Habitat.—From Senegal (Adanson) and Natal (Krauss) throughout the Indian Ocean (v. Martens) to Japan (Lischke) and North Australia (Brazier).

Adanson (*loc. cit.*) says of this species, "Je l'ai trouvée fort rarement aux environs du cap Manuel." It is at least remarkable that nobody else has found it on the Atlantic coast of Africa.

10. *Trochus (Ziziphinus) decoratus*, Phil.

Trochus decoratus, Philippi, Zeitschr. f. Malak., 1846, p. 102, No. 19.
„ „ Philippi, Conch. Cab. (ed. Küster), p. 59, sp. 55, pl. xiii. fig. 1.
Ziziphinus decoratus, A. Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 165, sp. 28.
„ „ Reeve, Conch. Icon., vol. xiv. pl. iv. fig. 28, and pl. v. fig. 36.
„ „ Angas, Addit. Port Jackson Moll., Proc. Zool. Soc. Lond., 1877, p. 188, No. 127.
Trochus (calliostoma) decoratus, E. A. Smith, "Alert" Collections, Moll., p. 72, No. 90.

April 17–18, 1874. Port Jackson, Sydney, Australia. 2 to 10 fathoms.

Habitat.—Port Jackson (Angas), Brisbane (Brit. Mus.).

11. *Trochus (Ziziphinus) exasperatus*, Pennant.

Chemnitz, Conch. Cab., vol. v. p. 30, pl. clxii. fig. 1529, a, b.
Trochus exasperatus, Pennant, Brit. Zool., vol. iv. p. 126.
„ *erythroleucus*, Gmelin, Syst. Nat., 13th ed., p. 3581 (*teste* Fischer).
„ *conulus*, Da Costa, Conch. Brit., p. 40, pl. ii. fig. 4.
„ *exiguus*, Pulteney, Dorset. Cat., p. 44.
„ *crenulatus*, Brocchi, Conch. foss. Subapp., p. 354, pl. vi. fig. 2.
„ *minutus*, Dillwyn, Cat., vol. ii. p. 797, No. 91 (excluding the synonyms).
„ *erythroleucus*, Lamarck, Anim. s. vert., vol. vii. p. 30, and (ed. Desh.) vol. ix. p. 151, No. 69 (*Trochus minutus*, note by Deshayes).
„ *pyramidatus*, Lamarck, Anim. s. vert., vol. vii. p. 30, and (ed. Desh.) vol. ix. p. 150, No. 68.
„ „ Delessert, Recueil, pl. xxxvi. fig. 2.
„ *exiguus*, Wood, Ind. Test. (ed. Hanley), p. 149, pl. xxix. fig. 91.
„ *matonii*, Payraudeau, Moll. de Corse, p. 126, pl. vi. figs. 5, 6.
„ *crenulatus*, Philippi, Enum. Moll. Sicil., vol. i. pp. 176, 184, and vol. ii. pp. 150, 154.
„ „ Philippi, Conch. Cab. (ed. Küster), p. 69, sp. 68, pl. xiii. figs. 17, 18, 20, 22.
„ *exasperatus*, Philippi, Conch. Cab. (ed. Küster), p. 92, sp. 99, pl. xv. figs. 1, 15.
„ *exiguus*, Forbes and Hanley, Brit. Moll., vol. ii. p. 505, pl. lxvi. figs. 11, 12.

Ziziphinus exiguus, Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 165, No. 25.
„ *exasperatus*, Reeve, Conch. Icon., vol. xiv. pl. viii. fig. 54.
Trochus exasperatus, Jeffreys, Brit. Conch., vol. iii. p. 324, and vol. v. p. 203, pl. lxiii. fig. 3.
„ „ Hidalgo, Moll. test. marins Espagne, Journ. de conch., vol. xv. p. 401, sp. 6.
„ *exiguus*, Weinkauff, Conch. d. Mittelm., vol. ii. p. 365, sp. 10.
„ *exasperatus*, Aradas and Benoit, Conch. viv. Sicil., p. 161, No. 433.
„ „ Monterosato, Conch. foss. Monte Pellegrino, p. 29.
„ „ Monterosato, Enumeraz., p. 22.
„ „ Fischer in Kiener's Iconog., p. 266, sp. 147, pl. lxxxix. fig. 1.
„ „ Seguenza, Formaz. Terz., pp. 272, 320, 356.
„ „ Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1883, p. 105, sp. 28.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 50, 90, and 450 fathoms. Volcanic mud.

Habitat.—From the English Channel to the Canaries and the whole Mediterranean basin from 0 to 105 fathoms.

Fossil.—From the Zanclean or lowest Pliocene of Sicily and Calabria onwards (Seguenza).

Chemnitz (*loc. cit.*) gives to this species a very few words of description beginning, it is true, with the words "*Trochus minutus*," but the reason for not following Dillwyn and Deshayes in adopting that name is, that Chemnitz expressly says (what indeed is obvious) that he did not consider his description of the species complete. I have, in spite of Dr. Fischer, quoted Chemnitz, f. 1530, for this species, because it exactly represents a very aberrant form which I dredged in Madeira, but which certainly belongs to this species.

This species is extremely abundant at Madeira. This species, *Trochus zizyphinus*, *Venus casina*, and *Venus ovata*, all came to me under a label which bore "St. 75," but the depth marked on the label was only 50 to 90 fathoms.

Dr Gwyn Jeffreys has expressed in his British Conchology (*loc. cit.*), and repeated with increased conviction in his "Lightning" and "Porcupine" Moll. (*loc. cit.*), his doubts of the distinctness of this species, from *Trochus striatus*, Linn. On a point such as this, lying in a field which Dr Gwyn Jeffreys has so thoroughly made his own, the greatest deference is due to his opinion. At the same time, the very great number of specimens, young and old of both species, which I collected in Madeira, the similarity of their distribution, the absence of any connecting links between them, and the certainty with which in all cases they can be distinguished, compel me to say that I am at a loss to imagine what grounds there can be for an opinion which, I think, is held by Dr Gwyn Jeffreys alone.

12. *Trochus* (*Ziziphinus*) *similaris*, Reeve.

Ziziphinus similaris, Reeve, Conch. Icon., vol. xiv. pl. v. fig. 32.
„ „ Brazier, "Chevert" Moll., Proc. Linn. Soc. New South Wales, 1878, vol. ii. p. 44, No. 17.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Near Cape York, North-Eastern Australia. 6 fathoms. Coral mud.

Habitat.—Palm Island, North-Eastern Australia, 8 fathoms (Brazier), Lizard Island, Torres Straits (British Museum).

13. *Trochus* (*Ziziphinus*) *striatus*, Linne.

Trochus striatus, Linne, Syst. Nat., 12th ed., p. 1230, No. 597.
„ „ Chemnitz, Conch. Cab., vol. v. p. 29, pl. clxii. figs. 1527–28.
„ „ Brocchi, p. 661, pl. xvi. fig. 4.
„ „ Dillwyn, Cat., vol. ii. p. 797, sp. 90 (excluding the synonyms).
„ „ Lamarck, Anim. s. vert. (ed. Desh.), vol. ix. p. 156, sp. 77 (do.)
„ „ Wood, Ind. Test. (ed. Hanley), p. 145, pl. xxix. fig. 90.
„ „ Philippi, Enum. Moll. Sicil., vol. i. p. 176, sp. 6, p. 184, sp. 7, and vol. ii. p. 150, sp. 8, p. 154, sp. 8, and p. 264.
„ „ Philippi, Conch. Cab. (ed. Küster), p. 93, sp. 100, pl. xv. fig. 16 (not 17 or 18).
„ *Gravesi*, Forbes, Ægean Report, Brit. Assoc., 1843, p. 190.
„ *striatus*, Forbes and Hanley, Brit. Moll., vol. ii. p. 508, pl. lxvi. figs. 5–6.
Ziziphinus striatus, Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 165, sp. 26.
Trochus striatus, Hanley, Ipsa Linn. Conch., pp. 321, 529, pl. v. fig. 7.
Ziziphinus striatus, Reeve, Conch. Icon., vol. xiv. pl. vi. fig. 37.
Trochus striatus, Jeffreys, Brit. Conch., vol. iii. p. 322, sp. 11, and vol. v. p. 203, pl. lxiii. fig. 2.
Trochus striatus, Hidalgo, Moll. test. marins Espagne, Journ. de conch., vol. xv. p. 402, sp. 8.
„ „ Weinkauff, Conch. d. Mittelm., vol. ii. p. 363, sp. 9.
„ *ruscurianus*, Weinkauff, Conch. d. Mittelm., vol. ii. p. 367, sp. 12 (*teste* Jeffr.)
„ *striatus*, Aradas and Benoit, Conch. viv. Sicil., p. 162, No. 434.
„ „ and (*teste* Jeffr.) *Trochus fraterculus*, Monterosato, Enumeraz., p. 22.
„ „ Seguenza, Form. Terz. Calabr., pp. 272, 320, 356.
„ „ Fischer in Kiener's Iconog., p. 268, pl. lxxxix. fig. 2.
„ „ Jeffrey's "Lightning" and Porcupine" Moll., Proc. Zool. Soc. Lond. 1883, p. 104, sp. 27.

Station VIIp. February 10, 1873. Lat. 28° 35′ N., long. 16° 5′ W. Off Tenerife. 78 fathoms. Volcanic sand.

Habitat.—From the English Channel to the Canaries and the Mediterranean, from 0 to 108 fathoms.

Fossil. — From the Zanclean or lowest Pliocene of Sicily and Calabria onwards (Seguenza).

This species can never be confounded with *Trochus exasperatus*, Pennt., so long as the apex is recognisable.

14. *Trochus* (*Ziziphinus*) *zizyphinus*, Linne.

Trochus zizyphinus, Linne, Syst. Nat., 12th ed., p. 1231, No. 599.
„ *zezyphinus*, Chemnitz, Conch. Cab., vol. v. p. 66, pl. clxvi. figs. 1592–94.
„ *zizyphinus*, Lamarck, Anim. s. vert., vol. vii. p. 23, and (ed. Desh.) vol. ix. p. 142, sp. 46.
„ „ Dillwyn, Cat., vol. ii. p. 799, sp. 94.
„ „ Philippi, Conch. Cab. (ed. Küster), p. 62, sp. 59, pl. xiii. fig. 6.
„ „ Wood, Ind. Test. ed. Hanley, p. 146, pl. xxix. fig. 94.
„ *albidus*, Wood, Ind. Test. Suppl., (ed. Hanley), p. 219, pl. v. fig. 14 (*zizyphinus*).
„ *zizyphinus*, Forbes and Hanley, Brit. Moll., vol. ii. p. 491, pl. lxvii. figs. 1–6.
„ *conuloïdes*, Reeve, Conch. Icon., vol. xiv. pl. ii. fig. 16 (in part).
„ *ziziphinus*, Searles Wood, Crag. Moll., vol. i. p. 124, pl. xiii. fig. 9, a—h.
„ *vulgaris*, Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 163, sp. 1.
„ *zizyphinus*, Hanley, Ipsa Linn. Conch., pp. 322, 529.
„ *zizyphinus*, Jeffreys, Brit. Conch., vol. iii. p. 330, sp. 15, and vol. v. p. 204, pl. lxiii. fig. 6.
„ „ Hidalgo, Moll. test. marins Espagne, Journ. de conch., vol. xv. p. 400, sp. 1.
„ „ Hidalgo, Molluscos Marinos de España, pl. lix. figs. 1–5.
„ „ Weinkauff, Conch. d. Mittelm., vol. ii. p. 358, sp. 4.
„ „ Aradas and Benoit, Conch. viv. Sicil., p. 160, No. 427.
„ „ Monterosato, Enumeraz., p. 21.
„ „ G. O. Sars, Moll. Reg. Arct. Norv., p. 141, No. 41.
„ „ Seguenza, Form. Terz. Calabria, pp. 271, 320, 350.
„ „ Fischer in Kiener's Iconog., p. 123, sp. 44, pl. xlii. fig. 2.
„ „ Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1883, p. 106, no. 32.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 fathoms. Volcanic mud.

Habitat.—From Finmark and the Færœs to the Canaries and the Mediterranean from 0 to 85 fathoms.

Fossil.—From the Miocene of the Vienna basin (Jeffreys), and from the Middle Pliocene onwards (Seguenza).

This is another of the cases to which I referred under *Trochus exasperatus*, Pennt., where the marking on the label sent to me did not agree with the officially published depth.

The species is one which every one knows, but about the synonymy of which everybody has his own opinion. In quoting authorities, my aim has been to choose such as are least in debate, as bearing on what in this country is accepted as Linne's species, omitting all, or nearly all, about which questions have been raised. The Challenger specimens are mere pulli in the worst condition, but belong unmistakably to Linne's species, and do not require the stirring of any inquiry about the relations of *Trochus Ziziphinus* to *Trochus conulus* or to *Trochus conuloïdes*.

15. *Trochus* (*Ziziphinus*) *arruensis*,[1] Watson (Pl. VI. fig. 5).

Trochus (*Ziziphinus*) *arruensis*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 91.

September 18, 1874. Arrou Islands, S.W. of Papua.

Shell.—Conical, carinated, flat on the base, strong, opaque, covered with tubercles, and coloured with grey and pink. *Sculpture:* There are eight spiral rows of small round tubercles on each whorl. The tubercles on the first two rows are larger than the others; these, as well as the next three rows, are parted by distinct depressions; the lowest three rows are much closer together, but project a little, especially the centre and largest row of the three. On the base there are about nine less strongly tubercled spiral threads, with feebler threads between, these intermediate threads becoming feebler towards the centre. The tubercles are smooth and polished, but the whole intervening surface is sharply fretted with fine oblique puckerings. *Colour* white, beautifully flecked above with greyish-purple blotches, and closely spotted with purplish pink on the base. *Spire* high and sharp-pointed, its concavely conical slope being slightly broken at the sutures by the projection of the two superior rows of tubercles. *Whorls* about 10, flat and of very regular increase. *Suture* slight, but distinct, being defined by the slight carinal spiral above, and the double row of larger tubercles below. *Mouth* rather small, square, and very oblique. *Outer lip* sharp but strong. *Inner lip* strengthened internally by a buttress of porcellanous nacre, which ends abruptly towards the point of the pillar, forming a tooth. The pillar, bevelled off to a sharp edge, is pressed back on the umbilicus, which it completely closes, leaving only a central depression and a post-columellar furrow. *Operculum* thin, yellow, normal. H. 0·64 in. B. 0·58, least 0·52. Penultimate whorl, 0·18. Mouth, height 0·42, breadth 0·3.

This species very much resembles *Trochus decoratus*, Phil., but that species is more highly narrowly conical, is flatter on the base, and the whole system of spirals is different. In *Trochus decoratus* also the earlier whorls are simply spiralled; here the spirals are cross-hatched. *Trochus nobilis*, Phil., is much larger, is flatter on the base, and is not so closely spiralled. *Trochus euglyptus*, Ad., has the whorls much rounder.

16. *Trochus* (*Ziziphinus*) *stephanephorus*,[2] n. sp. (Pl. XVII. fig. 1).

Station 201. October 26, 1874. Lat. 7° 3′ N., long. 121° 48′ E. Philippines. 82 to 102 fathoms. Stones, gravel.

Shell.—High, conical, tubercularly carinate and lirate, ruddy, with a coronated apex, glossy smoothish flatly conical whitish base, and a large quadrangular mouth. *Sculpture:* Longitudinals—the whole surface is obliquely scored with broadish well-parted little raised rounded striæ on the lines of growth, on the base these are feebler and less regular. Spirals—on each whorl there are about 7 strongish equal threads, which are somewhat sparsely dotted with low flat tubercles, whose greatest breadth is in the height

[1] This word follows the form of the island's name as written on the boxes sent me.

[2] στεφανηφόρος, coronated.

of the shell; each whorl round its base is keeled by a stronger prominent triangularly acute substellately tubercled thread; above this lies another thread a little stronger and more prominent than the normal spiral threads above; between these two stronger threads is a small shallow furrow, which is perpendicularly (not obliquely) striate; round the base and within the carinated periphery is another obtuse-angled, tubercled keel; on the base are some 18 or 20 flattened threads; towards the rim these are very feeble, and are not very distinguishable from the 2 or 3 weaker threads which occupy the wide intervals between; towards the middle space of the base the stronger threads become more marked and also faintly tubercled, the interstitial ones tend to disappear; close in to the pillar, however, some very faint threads again appear in the interstices. *Colour* pale ruddy, with some suffused deeper spots, and flecked on the tubercles with rich bright chestnut. *Spire* conical, with straight profile lines. *Apex* rather large, blunt, and coronated[1] by the prominence of the carinal tubercles; it is rather strongly radiatingly striated; the extreme tip is very minute and is immersed; it is rough, not polished or glossy. *Whorls* in all 9, of very regular but somewhat rapid increase; they are flatly conical, being neither convex nor concave; the last is largish, and is very sharply angulated at the periphery. *Suture* linear, and only recognisable from the projecting keel above it. *Mouth* largish, quadrangular. *Outer lip* thin, flat on the side and on the base, acute-angled at the periphery. *Pillar* is broken in front, but seems short; it is encompassed with a pad of nacre and has a twist on it; there is no approach to an umbilicus. H. 1 in. B. 0·95. Penultimate whorl, height 0·28. Mouth, height, 0.3. Breadth (from angle to angle) 0·5.

In general character this is like *Trochus meyeri*, Phil. = *Trochus lævis*, Homb. and Jacq. (Voy. au pôle sud, Zool., vol. v. p. 56, pl. xiv. figs. 17, 18), but that shell is in colour brown, and the stains are arranged in narrow divergent lines, not, as here, in ruddy stains affecting especially the tips of the tubercles. In that species, the whole whorl swells out below the suture, not, as here, the mere thread, nor in that species are the tubercles there any larger than elsewhere. The threads on the sides are fewer, and their tubercles are larger; on the base the threads are much coarser and are more strongly tubercled; the entire apex is dark coloured, and is smaller and smoother.

17. *Trochus* (*Ziziphinus*) *stirophorus*,[2] Watson (Pl. VI. fig. 2).

Trochus (*Ziziphinus*) *stirophorus*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 695.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Small, conical, scalar, inflated on the base; whorls angulated, with three strong carinas near the periphery, white over nacre. *Sculpture:* Spirals—at the periphery is a sharp flange-like carina; above this, about one-third of the distance to the suture, is a second, almost equally strong and prominent, which forms a shoulder to the whorls. The

[1] Hence the name.

[2] στεῖρα, a keel; φορεῖν, to have.

space between this and the suture is divided pretty equally by two threads, the lower of which is feeble. On the upper whorls all of these are closely beaded, on the last whorl only the two highest are so. Below the carina is another remote strong thread, which meets the outer lip; within it is another, not quite so strong nor so distant, and occupying the space from this to the middle are five flat close-set threads, followed by three rather more separated and roughly beaded threads, the inmost of which, like a twisted cable, forms a sort of pillar with a chink between it and the sharp edge of the pillar-lip, and advances into a small tooth at the angle where it joins the outer lip on the base. Longitudinals—the whole surface is roughened by rather coarse oblique lines of growth, which on the upper whorls appear as oblique reticulating ribs. *Colour* white, with a translucent calcareous layer over nacre. *Spire* rather high, scalar. *Apex* a little flattened down and rounded, the minute rounded embryonic 1¼ whorl scarcely rising above the level. *Whorls* 6, of rather rapid increase, with a narrow flat shelf below the suture, thence sloping flatly to the shoulder-carina, from which point the contour-line descends perpendicularly; the base is inflated at the edge and flattened in the middle. *Suture* deeply impressed between the narrow flat shelf below and the overhanging carina above. *Mouth* slightly oblique, but with a perpendicular pillar, round; nacreous within. *Outer lip* thin, transparently porcellanous on the edge, but thickened by nacre within. *Pillar-lip* perpendicular, rounded within the mouth, advancing to a sharp point in front, slightly reverted but not appressed, having a small open furrow and a minute umbilical chink behind it. H. 0·3 in. B. 0·26, least 0·22. Penultimate whorl, 0·053. Mouth, height 0·14, breadth 0·14.

This species extremely resembles *Trochus occidentalis*, Migh. (see Pl. VI., fig. 2 *), but is smaller, is broader in proportion, with a less high spire; the apex is not sharp and projecting, but flattened down and rounded; the whorls are much more scalar, and of more rapid increase; the base is more on its outer tumid edge and more rounded. The apex is ornamented with a microscopic and quite irregular inlaid work of angular depressions, parted by very narrow interrupted raised lines; whereas in that species the ornamentation is like honeycomb, with relatively large, nearly regular hexagonal pits and raised flat borders. This difference is shown in the woodcut. The threads on the base are approximate, not parted in the middle by a smooth zone, and the pillar-lip is not appressed as in that species; the outer lip, too, is thickened within by the layer of nacre.

Ornamentation of apex. *T. occidentalis.* *T. stiraphorus.*

18. *Trochus* (*Ziziphinus*) *tiara*,[1] Watson (Pl. VI. fig. 4).

Trochus (*Ziziphinus*) *tiara*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 696.
Calliostoma tiara, Dall, "Blake" Dredgings, Bull. Mus. Comp. Zool., Cambridge, U.S.A., vol. vi. p. 45.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

[1] So called from its high narrow form.

Station 56. May 29, 1873. Lat. 32° 8′ 45″ N., long. 64° 59′ 35″ W. Bermuda. 1075 fathoms. Coral mud.

Habitat.—Off Havana. 220 to 539 fathoms (Dall).

Shell.—Small, conical, high-spired, flatly rounded on the base, sculptured, white, dull on the surface, with a bright nacreous gleam shining through. *Sculpture:* Spirals—on the upper part of the last whorl there are two rows of tubercles, the first and weaker is close up to the suture; the second is a little lower than the middle, and its tubercles are strong. Of these there are on each row twenty to twenty-five; they are scarcely connected by a spiral thread. The periphery is sharply angulated and defined by an expressed and tubercled carina, the tubercles of which are hardly so strong as those of the second row above, which from its larger points projects quite as much as the carina. On the base there is an infra-carinal furrow and three or four sharpish, equally parted, faintly tubercled, spiral threads, the inmost of which is most distinctly tubercled, and defines the umbilical depression. Longitudinals—the apical whorls, except the embryonic one, are crossed by high, sharp, slightly oblique ribs; but these on the later whorls break up into tubercles, between which on the different rows there is a slight irregular connection by flattened ridges, which are oblique, interrupted, and on the base sinuous. Besides these, the surface is roughened by minute wavy irregular lines of growth. *Colour* white, with a translucent layer of porcellanous glaze over brilliant pearly nacre. *Spire* high. *Apex* small, flattened, with the minute inflated 1¼ embryonic whorl rising a little exserted on one side. *Whorls* 7, projecting out squarely below the suture, flattened in the middle, protuberant at the second row of tubercles, and slightly contracted above the carina; at the carina sharply angulated. The base, which is flatly rounded, has a narrow flattish margin, and in the middle a slight umbilical depression, in the centre of which is a minute umbilical hole almost covered by the pillar-lip. *Suture* linear. *Mouth* scarcely oblique, and very slightly inclined out from the axial line, squarish, but rounded on the base and at the angles, a little broader than high, nacreous within. *Outer lip* not thin, with a slight callus just within it; it is slightly sinuated on the base at the outer corner. *Pillar-lip*, on leaving the body, bends over very flatly so as to cover the umbilicus, after which it curves round to the left; it has a very blunt tubercle in the middle, is a little reverted, and has a very slight furrow behind it. *Umbilicus* a small open depression leading into a minute central pore. The slopes of the depression are obliquely scored by the tubercles of the central basal thread. H. 0·22 in. B. 0·16, least 0·15. Penultimate whorl, 0·05. Mouth, height 0·06, breadth 0·07.

This beautiful little shell offers some rather perplexing features; for the curves of growth on the base indicate a slight sinus toward its outer edge, which, indeed, is shown in the actual mouth-edge,—a peculiarity suggestive of the genus *Basilissa;* but there is not seldom in the Trochidæ

a tendency to a backward curve of the lip-edge at that point; and in this species there does not exist the characteristic infra-sutural sinus which would connect it with *Basilissa* or with *Seguenzia*, to which its tubercled pillar and closed umbilicus rather point.

Margarita carinata, A. Ad., from the Philippines, has some points of resemblance with this, but is obviously very different—markedly in the form of the umbilicus.

19. *Trochus* (*Ziziphinus*) *transenna*,[1] Watson (Pl. VI. fig. 3).

Trochus (*Ziziphinus*) *transenna*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 698.

Station 201. October 26, 1874. Lat. 7° 3′ N., long. 121° 48′ E. Philippines. 82 fathoms. Stones and gravel.

Shell.—Small, conical, high, carinated, inflated on the base, thin, sculptured, yellowish with small ruddy spots. *Sculpture:* Spirals—close to the suture is a row of disconnected beads; between this and the carina are three rows of appressed beads, of which the highest is the weakest; these four rows are parted from one another by furrows, each of which is a little broader than the thread above it; the carina also consists of a row of appressed beads; it is stronger than the other threads both in breadth and height, and the furrow above it is a little broader and deeper than the rest. On the base are seven rows of appressed beads of nearly equal width and distance from one another; the first joins the outer lip, the central row twines up the pillar. These rows of beads make their appearance on the second whorl, and, on all the upper whorls, more than on the body-whorl, the carina is sharply expressed by a constriction above and below it. Longitudinals—the whole surface is crossed obliquely by not quite contiguous threads, which are almost as strong as the spirals. Between the threads are narrow, deep, long pits; each alternate thread is crowned by a bead at the suture. *Colour:* The surface is dull and rough, yellowish, sparsely spotted on the spirals with a ruddy brown, which is almost crimson on the infra-sutural beads. *Spire* high and conical, the whorls being barely rounded. *Apex* small but flattened, the embryonic 1¼ whorl scarcely projecting. *Whorls* 7, of regular increase, almost flat, the body-whorl alone being slightly convex, rounded, and carinated at the periphery and tumid on the base, in the centre of which is a most minute umbilical chink. *Suture* deeply and squarely impressed below the carina. *Mouth* slightly oblique, squarish, nacreous. *Outer lip* very thin, very slightly descending, and drawn in a little horizontally at its junction with the body, and then well rounded in its whole sweep to the point of the pillar-lip, near which it is externally crenulated by the ends of the basal threads. *Pillar* is short, straight, slightly tubercled on its inner side, hardly toothed in front, and still less angulated at its junction with the outer lip. The

[1] A lattice.

pillar-lip is very thin, slightly excavated longitudinally, and reverted on the minute umbilicus, which it almost wholly conceals. Behind it is a very narrow furrow. H. 0·27 in. B. 0·22, least 0·2. Penultimate whorl, 0·075. Mouth, breadth 0·117, height 0·125.

In form and details of sculpture this species is extremely like *Trochus* (*Thalotia*) *elisa*, Gould, from island of Capul, in the Philippines (British Museum), but is very obviously different.

20. *Trochus* (*Ziziphinus*) *tinctus*, n. sp. (Pl. XVII. fig. 2).

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 fathoms. Sand.

Shell.—Small, conical, high spired, flatly rounded on the base, sculptured, creamy white, with faint chestnut specks.[1] *Sculpture:* Longitudinals—there are wrinkled lines of growth above, and on the base fine hair-like striæ. Spirals—there are strong threads parted by slight furrows, 10 above the periphery on the last whorl, 6 on the penultimate whorl; between the second and third threads above the periphery a slightly broader and more distinct furrow occurs; all the threads are closely packed, with rather coarse round tubercles; the edge of the base is pretty sharply angulated; the angulation becomes blunt and rounded toward the mouth; on the base there are 10 flattish, somewhat unequal untubercled threads parted by very shallow and narrow furrows, which become somewhat stronger toward the pillar. *Colour* creamy, sparsely speckled, with small pale chestnut-coloured dots. *Spire* rather high, conical. *Apex* a little coarse, but small, consists of $1\frac{1}{2}$ embryonic whorls, of which the tip is red and elevated, somewhat coarsely but regularly honeycombed. *Whorls* $6\frac{1}{2}$, conical, with flattened slopes of slow regular increase; the last, which is not large, is angulated at the periphery, descends at the mouth, and has a flatly conical, slightly convex base. *Suture* small, but coarse, and a little impressed. *Mouth* very oblique, but with a perpendicular pillar; it is nearly square in form; there is very little nacre within. *Outer lip* thin; at its insertion it is a good deal drawn in on the base of the shell; it is patulous on the side, but very little so on the base. *Pillar lip* is broad, strong, reverted, channelled, twisted, and bluntly angulated, patulous, but not toothed at its junction with the base. H. 0·25 in. B. 0·23. Penultimate whorl, height 0·07. Mouth, height 0·11, breadth 0·11.

An inconspicuous but pretty little species, which, though small, seems quite full-grown.

21. *Trochus* (*Elenchus*) *badius*, Wood.

Trochus badius, Wood, Ind. Test. (ed. Hanley), p. 221, Suppt., pl. vi. fig. 46.
Monodonta rosea, Lamarck, Anim. s. vert., vol. vii. p. 37, and (ed. Desh.) vol. ix. p. 181, sp. 22.

[1] Hence the name.

Monodonta rosea, Delessert, Recueil, pl. xxxvii. fig. 3.
Trochus australis, Quoy and Gaimard, "Astrolabe," vol. iii. p. 238, pl. lxiii. figs. 13, 14.
„ *roseus*, Philippi, Conch. Cab. (ed. Küster), p. 134, sp. 156, pl. xxiii. fig. 7.
„ *badius*, Philippi, Conch. Cab. (ed. Küster), p. 137, sp. 137, pl. xxiii. fig. 14.
„ *Quoyi*, Philippi, Conch. Cab. (ed. Küster), p. 139, sp. 165, pl. xxiii. fig. 17.
Elenchus badius, Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 170, sp. 1.
„ „ Angas, South Austr. Moll., Proc. Zool. Soc. Lond., 1865, p. 180, No. 158.
„ „ Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 215, No. 184.
Trochus badius, Fischer in Kiener's Iconog., p. 151, sp. 64, pl. L, figs. 2 and 3.

May 1874. Port Jackson, Sydney. 6 to 7 fathoms.

Habitat.—South Australia, Tasmania, and Port Jackson (Angas).

22. *Trochus (Bankivia) fasciatus* (Menke).

Phasianella fasciata, Menke, Syn. Meth. Moll., pp. 51, 141.
„ *undatella*, Menke, Syn. Meth. Moll., pp. 51, 141.
„ *fulminata*, Menke, Syn. Meth. Moll., pp. 51, 141.
Bankivia varians, Krauss, Südafrik. Moll., p. 105, pl. vi. fig. 7.
„ „ Philippi in Conch. Cab. (ed. Küster), Monog., *Phasianella* and *Bankivia*, p. 33, pl. v. figs. 1–5.
„ *purpurascens*, A. Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 171, sp. 1.
„ *varians*, Carpenter, Mazatlan Cat., p. 226, No. 285.
„ „ Adams, Genera, vol. i. p. 425, pl. xlviii. fig. 6.
„ „ Chenu, Man. Conch. vol. i. p. 360, figs. 3674, 3675.
„ *purpurascens*, Angas, South Austr. Moll., Proc. Zool. Soc. Lond., 1865, p. 181, No. 166.
„ *varians*, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 216, No. 188.
„ „ von Martens, Südafrik. Moll., Jahrb. d. deutsch. Malak. Gesellsch., 1874, p. 130, No. 105.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—All the shores of Extra-tropical Australia.

The Messrs Adams (Gen. *loc. cit.*) speak of the position of *Bankivia* as doubtful, for this among other reasons, that "the aperture is not pearly within;" but this species has a nacrous layer of shell, rather thin, but quite unmistakable, though covered both on the outside and within by a relatively thick porcellanous layer.

Krauss (who declines to guarantee it as a Cape species, as does v. Martens entirely) says that Menke's three species are only colour varieties of this variable shell. Why he gives Beck the nomination right of priority does not appear. Philippi says that *Bankivia* is a generic name proposed but not published by Beck.

Carpenter (*loc. cit.*) says that "one very young fresh specimen of this well-marked shell was found on the back of a Chama" from Mazatlan; but this must have found its way thither by mere accident.

23. *Trochus* (*Leiopyrga*) *picturatus* (H. & A. Adams).

Leiopyrga picturata, H. & A. Adams, Ann. and Mag. Nat. Hist., ser. 3, vol. xi., 1863, p. 19 (not *Ziziphinus picturatus*, A. Ad.)
" " Angas, South Austr. Moll., Proc. Zool. Soc. Lond., 1865, p. 181, No. 165.
" " Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 216, No. 189.
Bankivia (*Leiopyrga*) *picturata*, E. A. Smith, "Alert." Collections, p. 75, No. 98, pl. vi. fig. c.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
April 23, 1874. Port Jackson, Sydney. 6 to 15 fathoms.
Station 163B. June 3, 1874. Lat. 33° 51′ 15″ S., long. 151° 22′ 15″ E. Off Port Jackson, Sydney. 35 fathoms. Hard ground.

Habitat.—South Australia and Port Jackson (Angas).

Tryon classes this under *Phasianella*, with which it has nothing specially to do. As Mr Angas truly remarks, "It has somewhat the aspect of an umbilicated *Bankivia* with rounded whorls;" to which I may add that it has also a thin membranaceous *Trochus*-like operculum, but of fewer whorls than usual in the genus. The nacre of the shell is very marked. The mantle of the animal is very large and capacious, but thin. The tentacles are large and very long, strongly ciliated with a long deep posterior channel running down their whole length. The eyes are very minute on the end of rather long and fine tubercles. There are four pedal appendages on the right and three on the left side, and there are also the two head lappets common to *Trochus*. The teeth are like those of *Margarita*.

24. *Trochus* (*Trochocochlea*) *colubrinus*, Gould.

Trochus edulis, R. T. Lowe, MS.
" *crassus*, D'Orbigny, Moll. de Canaries (Webb and Berthelot), p. 82, No. 102 (but not of "Matton and Rackett," to whom D'Orbigny ascribes the species).
" (*monodonta*) *colubrinus*, Gould, Proc. Soc. Nat. Hist. Bost., vol. iii. p. 107.
" *colubrinus*, Gould, Expl. Exped. (Wilkes), Shells, p. 183, pl. xiii. fig. 223.
" *crassus*, British Museum (but not of Pulteney).
" *variegatus*, British Museum (but not of Anton).
" *luctuosus*, British Museum (as of Gould, who has, however, no such species).
" *lineatus*, M'Andrew, Geog. Distrib. Moll. (Brit. Assoc. Reports for 1851), pp. 13, 16, 25 (but not of Da Costa).
" *sagittiferus*, Hidalgo, Moluscos Mar. España, pl. lx. figs. 2–7 (but not of Lamarck).
" *citrinus*, Fischer in Kiener's Iconog., p. 262, sp. 144, pl. lxxxviii. figs. 1, 1a (but query of Gmelin).

February 1873. Shells from the rocks of Santa Cruz, Tenerife.

Habitat.—Madeira (Gould, Watson), Mogador and the North of Spain (M'Andrew), Cape Verde Islands and Senegal (Fischer).

It is impossible to accept the identification of this species with *Trochus lineatus*, Da Costa (= *Trochus crassus*, Pult.), a British and Adriatic shell, or with *Trochus variegatus*, Anton, from the Cape of Good Hope, or with *Trochus sagittiferus*, Lam., also from the Cape, or with *Trochus turbinatus*, Born. (= *tessellatus*, Gmel.), a Mediterranean [1] species, or with *Trochus articulatus*, Lam., also a Mediterranean form. I am far from saying that some or all of these may not be the same; I only say that no sufficient evidence of transitional forms has been produced to justify their union.

I regret further to be unable to accept the identification of this species with *Trochus citrinus*, Gmel., which both Philippi (Conch. Cab., ed. Küster, p. 290, see pl. xlii. figs. 12, 13) and Fischer *loc. cit. sup.*) approve. That species, according to Gmelin, belongs to Asia; the description he gives of it [2] is insufficient for determining any species, and is in some points as little applicable to the Madeiran species as it could well be; finally, the figure he quotes from Knorr (Vergnügen d. Augen, vol. i. p. 16, pl. x. fig. 7) presents a back view of a shell, and is beyond recognition. All this indeed Dr Fischer admits, for he says, "Rien ne prouve . . . l'identité du type de Philippi avec le type de Gmelin," adding, "il m'est impossible d'identifier convenablement le type de Knorr." This last point presents precisely the difficulty which seems really insurmountable, since everything depends on what Knorr's species really was, and that cannot be ascertained.

In looking about, then, for a name, *Trochus listeri*, Wood, presents itself. It is figured in Wood's Ind. Test. Suppt. (ed. Hanley), p. 219, pl. v. fig. 8. It is not unlike the species we are examining; it is said to come from Madeira, where there is no other species it can be, and the type specimen is said to be in the British Museum. Were this last statement correct, Wood's name might possibly have found acceptance, but Mr Edgar Smith assures me there is no such shell to be found in the British Museum. Such being the case, *Trochus listeri*, which has not a single word of description, and only such a figure as the Index offers, is beyond identification.

There is really, then, no other name than that of Gould; and though his figures are far from good, yet, taking along with them the description he gives, and the locality to which he attributes his shell, no doubt can remain that *Trochus colubrinus* is the species from Madeira that has been so sorely in want of a name.

I have quoted Mr Lowe's name as that by which it has been locally known for many years—one, too, which very strikingly recalls the enormous use of the animal by the common people as an article of food, and the consequent presence of the rejected shells everywhere in town and country. Unfortunately Mr Lowe's name was never published.

The finding of the species at Santa Cruz, Tenerife, is a fact worthy of notice. There are in the Challenger collection five immature specimens quite unmistakable. It is on the strength of these that I have quoted D'Orbigny (*loc. cit. sup.*) as having this species in view under the name of *Trochus crassus*, "Matton and Rackett." I am not aware of any one else having quoted it for the Canary Islands, and I do not remember to have myself found it either at Canary or at Tenerife. This fact, however, I am unable to verify, as the restraints of narrow accommodation make my Canarian collection quite inaccessible.

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[1] Dr Fischer (Kiener, p. 202) adds, "Canarian" on the authority of M'Andrew; but I have failed to find any authority in M'Andrew for the statement.

[2] Trochus testa conico-convexa, citrina, lineis angulatis nigris picta: anfractibus duobus primis fusco obumbratis.

25. *Trochus* (*Trochocochlea*) *fuligineus*, A. Adams (Pl. IV. fig. 11).

Labio fuliginea, A. Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 180, sp. 25.
Trochocochlea fuliginea, Adams, Genera, vol. i. p. 426.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—" ? "—(Ad.)

I give this under the name it bears in the British Museum, but have a very strong impression that it is the *Trochus striolatus*, Quoy and Gaimard, " Astrolabe," vol. iii. p. 253, pl. lxiii. figs. 18–22.

Specimens of this species exist in the British Museum, but without any mark of locality. It does not occur in Australian lists, so far as I know.

26. *Trochus* (*Diloma*) *porcifer* (A. Adams), (Pl. IV. fig. 12).

Labio porcifera, A. Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 179, sp. 23.

June 26, 1874. D'Urville Island, New Zealand, Beach.

Habitat—" ? "—(Ad.) New Zealand (Brit. Mus.)

This species seems to have fallen into utter oblivion. Adams' description was not such as to secure its recognition; no figure of the shell was given; the very name of the species is omitted in Adams' Genera. Dr Fischer does not give it in Kiener, and in no list of New Zealand species does it seem to occur. Possibly it has passed as *Trochus nigerrimus*, Gmel. (his *Turbo*, not his *Trochus* of that name), which seems to be plentiful, but which is quite distinct. This supposition is confirmed by a remark of Tapparoni-Canefri on the *Trochus* (*Diloma*) *nigerrimus*, Gmel. (Viaggio d. " Magenta," Moll., p. 66), " Alcune varietà del *Trochus araucanus*" (D'Orb., a synonym for *Trochus nigerrimus*, attached by him to the species as found in Chili), " mi parvero avere una grande analogia con una specie che nel Museo di Londra porta il nome di *Diloma porcifera*, ed è della Nuova Zelanda."

As to the distinctness of the two species, I was glad to have my own estimate confirmed by Mr Edgar A. Smith, who, with his usual kindness, compared for me D'Orbigny's types of *Trochus araucanus* with New Zealand specimens of *Trochus nigerrimus*, Gmel., and further Adams' type of *Labio porcifera*, with Gmelin's species. As to the first pair, he writes (August 5, 1884), " I find not a shadow of difference, and am *certain* they are the same species. This is remarkable, as a similar distribution occurs in the case of *Ranella vexillum* (*vide* Smith, Proc. Zool. Soc., 1881, p. 31)."[1]

Then in regard to the second pair he adds, " *Trochus porciferus* is more strongly spirally ridged, more or less punctate with yellowish, and has the columella porcellanous white, with a pearly depression running up the centre. On the contrary, *Trochus nigerrimus* has a pearly band scarcely at all impressed, extending from the lower part of the columella right across to the termination of the outer lip above—a feature constant in all stages of growth."

[1] I have thought it important to reproduce this whole note in connection with some doubts expressed by Tapparoni-Canefri on this point in continuation of the very passage quoted above.

The small specks on the shell which Mr E. A. Smith refers to above as yellow are white on the Challenger specimen. An interesting variation of this same kind occurs in a specimen of *Trochus* (*Diloma*) *fuligineus*, A. Ad., in the Challenger collection, in which the minute specks, which are usually yellow, are on the most of the shell white, but are yellow on the last part near the mouth, where the shell has been broken and repaired.

The operculum of *Trochus porcifer*, which Adams does not mention, is that of a typical *Trochus*, being thin, horny, of many whorls, whose edge forms an imbricated flange on the outer face of the operculum.

27. *Trochus* (*Oxystele*) *euspira* (Dall.)

Margarita (?) *euspira*, Dall, "Blake" Dredgings, Bull. Mus. Comp. Zool., vol. ix. pp. 44, 102.
Trochus (*Oxystele*) *euspira*, Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1883, p. 98, sp. 10, pl. xx. fig. 6.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—North Atlantic, 740 to 1095 fathoms (Jeffreys), Gulf of Mexico, 805 fathoms (Dall).

28. *Trochus* (*Photinula*) *cærulescens* (King).

Margarita cærulescens, King, Zool. Journ., vol. v. p. 346, No. 54.
Trochus lineatus, Philippi, Archiv f. Naturgesch., 1845, p. 66, sp. 50 (not of Da Costa).
„ *cærulescens*, Philippi, Conch. Cab. (ed. Küster), p. 250, sp. 321, pl. xxxvii. fig. 11.
Margarita maxima, Hombron and Jacquinot, Pôle sud, p. 59, pl. xiv. figs. 32, 33 (not *Trochus maximus*, Koch).
Photina cærulescens, A. Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 191, sp. 2.
Photinula cærulescens, Adams, Genera, vol. i. p. 427, pl. xlviii. fig. 9.
Margarita cærulescens, Sowerby in Reeve's Conch. Icon., vol. xx. pl. ii. fig. 12.
Trochus hombroni, Fischer in Kiener's Iconog., p. 320, sp. 185, pl. c. fig. 3.

Station 315. January 26, 1876. Lat. 51° 40′ S., long. 57° 50′ W. Port Stanley and Port William, Falkland Islands. 5 to 12 fathoms. Sand and gravel.

Habitat.—Straits of Magellan (Philippi), Falkland Islands (Fischer).

This species has suffered much in the matter of its name, and I greatly fear that consistency requires those who maintain the integrity of Linne's genus to follow Dr Fischer in calling it *Trochus hombroni*, though *kingi* would have been a more generous choice of name. I have retained the oldest name because Deshayes has thrown some doubt on the *Trochus cærulescens*, Lam. (see Anim. s. vert., 2d ed., vol. ix. p. 135, note), and in the present uncertainty of all nomenclature, it is not impossible it may have right to survive.

King's species differs from *Trochus* (*Photinula*) *tæniatus*. Sow., not only in colour, but in form. It is in particular more depressed, the spire being much less exserted: the pillar is very much shorter,

rather more oblique, but less curved, the base is flatter, the umbilical pad is thicker, the mouth more transverse and squarer in form; and yet, after all, I greatly doubt that they are really distinct. The embryonic apexes are identical.

29. *Trochus* (*Photinula*) *tæniatus* (Sowerby).

Turbo tæniatus, G. B. Sowerby (1825), Tankerville Catalogue, Appendix, p. xiii. No. 1402.
Trochus bicolor, Lesson, "Coquille," Plates 1826, Text 1830, p. 345, pl. xvi. fig. 3.
Margarita tæniata, Sowerby, Conch. Ill., fig. 2.
„ „ Reeve, Conch. Syst., vol. ii. p. 169, pl. ccxxi. fig. 2.
Trochus (*Margarita*) *tæniatus*, Philippi, Abb. und Besch., vol. i. p. 137, pl. xxxii. (*Generis* iv.), fig. 2.
„ *tæniatus*, Philippi, Conch. Cab. (ed. Küster), p. 251, sp. 322, pl. xxxvii. fig. 12.
„ (*Margarita*) *purpuratus*, Forbes, Proc. Zool. Soc. Lond., 1850, p. 272, pl. xi. fig. 11.
„ *tæniatus*, Wood, Ind. Test. (ed. Hanley), p. 219, pl. v. fig. 12.
Margarita tæniata, Reeve, Conch. Icon., vol. xx. pl. i. fig. 4.
Trochus tæniatus, Fischer in Kiener's Iconog., p. 319, No. 184, pl. c. fig. 2.

Station 315. January 26–28, 1876. Lat. 51° 40′ S., long. 57° 50′ W. Port William, Falkland Islands. 5 to 12 fathoms. Sand and gravel.

Station 316. February 3, 1876. Lat. 51° 32′ S., long. 58° 6′ W. Port Louis, Falkland Islands. 2 to 5 fathoms. Mud.

Habitat.—Straits of Magellan (Lesson and British Museum), Falkland Islands (Phil.), W. coast of N. America (Forbes).

The operculum of this species does not seem to have been mentioned. It is thin, of many whorls, which are flanged on the outer face along their edge.

30. *Trochus* (*Photinula*) *expansus* (Sowerby).

Margarita expansa, Sowerby, Malacol. and Conchol. Mag., p. 24, and Conch. Illustr., figs. 16 and 17.
Trochus expansus, Philippi in Conch. Cab. (ed. Küster), p. 254, sp. 327, pl. xxxvii. fig. 18.
„ (*Margarita*) *Hillii*, Forbes, Proc. Zool. Soc. Lond., 1850, p. 272, pl. xi. fig. 10.
Photina expansa, Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 191, sp. 3.
Photinula expansa, Adams, Genera, vol. i. p. 428.
Photina expansa, Tapparone-Canefri, Viaggio "Magenta," p. 67.
Trochus (*Photinula*) *expansa*, E. A. Smith, Moll. Kerguelen, Phil. Trans., 1877, p. 11 (sep. imp.)

Station 144A. December 26, 1873. Lat. 46° 48′ S., long. 37° 49′ 30″ E. Off Marion Island. 50 to 75 fathoms. Volcanic sand.

Station 145. December 27, 1873. Lat. 46° 43′ S., long. 38° 4′ 30″ E. Between Marion Island and Prince Edward Island. 50 to 140 fathoms. Volcanic sand.

Station 149B. January 17, 1874. Lat. 49° 28′ S., long. 70° 30′ E. Near entrance of Royal Sound, Kerguelen. 25 fathoms. Volcanic mud.

Station 149C. January 19, 1874. Lat. 49° 32′ S., long. 70° E. Balfour Bay, Royal Sound. 60 fathoms. Volcanic mud.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Station 315. January 26–28, 1876. Lat. 51° 40′ S., long. 57° 50′ W. Port William, Falkland Islands, from the kelp, in from 5 to 12 fathoms. Sand and gravel.

Station 316. February 3, 1876. Lat. 51° 32′ S., long. 58° 6′ W. Port Louis, Falkland Islands. From the crop of a duck.

Habitat.—Strait of Magellan.

The specimens from Station 316 seem to have been quite newly swallowed, the animals being still entire and retaining the operculum.

Some of the pink varieties of this extremely abundant shell are occasionally taken for *Trochus* (*Photinula*) *violacea*, King (= *Margarita magellanica*, Homb. and Jacq., and = ? *Margarita persica*, Gould), the specific distinctness of which Mr E. A. Smith questions, though, I think, needlessly.

31. *Trochus* (*Chlorostoma*) *ater*, Lesson.

Trochus ater, Lesson, Voyage "Coquille," p. 344, pl. xvi. fig. 2.
Turbo lugubris, King, Zool. Journ., vol. v. p. 345, No. 47.
Trochus ater, D'Orbigny, Voy. Amér. mérid., vol. v. No. 309, p. 409.
„ „ Gould, Explor. Exped., p. 182, pl. xiii. fig. 211.
„ „ Philippi, Abb. und Besch., vol. i. p. 188, pl. xliv. (Generis v.), fig. 6.
„ „ Philippi, Conch. Cab. (ed. Küster), p. 198, sp. 243, pl. xxx. fig. 1.
Chlorostoma atrum, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 180, sp. 4.
„ „ Chenu, Man. Conch., vol. i. p. 361, fig. 2682.
Trochus ater, Fischer in Kiener, Turbo, p. 109, sp. 74, pl. xxx. fig. 2.
Chlorostoma atrum, Tapparone-Canefri, "Magenta," p. 65.

November 18, 1875. Valparaiso, Shore.

Habitat.—Chili and Bolivia (D'Orb.), Straits of Magellan (Tapp.-Canef.)

32. *Trochus* (*Chlorostoma*) *xanthostigma* (A. Adams).

Chlorostoma xanthostigma, Adams, Monog. Trochid., Proc. Zool. Soc. Lond., 1851, p. 183, No. 32.
Trochus nigricolor, Dunker, Malak. Blätter, 2d series, Neue Japanische Mollusken, 1860, vol. vi. p. 237, No. 50.
„ „ Dunker, Moll. Jap., p. 22, pl. iii. fig. 2.
„ „ Lischke, Japan. Meer. Conch., vol. i. p. 100, pl. vii. figs. 1, 2, vol. ii. p. 91.

May 14, 1875. Oosima, Japan.

Habitat.—Japan (Dunker).

33. *Trochus* (*Omphalius*) *hotessierianus*, D'Orb.

Trochus hotessierianus, D'Orbigny, Moll. de Cuba, vol. ii. p. 59, pl. xviii. figs. 15 to 17.
„ *hotesserianus*, Philippi, Conch. Cab. (ed. Küster), p. 270, sp. 349, pl. xxxix. fig. 15.
Omphalius hotesserianus, Adams, Genera, vol. i. p. 429.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Habitat.—West Indies.

This species, and a good many more of those classed by Adams under *Omphalius*, Phil., could not be admitted there with Adams' addition to Philippi's diagnosis of the sub-genus, for they have no "transverse series of granules" whatever.

34. *Trochus* (*Monilea*) *benzi*, Krauss.

Trochus benzi, Krauss, Südafrik. Moll., 1849, p. 99, sp. 15, pl. v. fig. 32.
„ „ Philippi, Conch. Cab. (ed. Küster), p. 320, sp. 418, pl. xlvi. fig. 1.
„ „ v. Martens, Südafrik. Moll., Jahrb. malak. Gesellsch., 1874, p. 129, No. 99.

December 1873. Simons Bay, Cape of Good Hope. 15 to 20 fathoms.

Habitat.—False Bay, Simons Bay (Krauss).

I leave this species among the Monileas, where the Messrs Adams have put it; but the shell is conoidal, not "orbicular;" the "axis is," though pervious, not "widely perforated;" nor is "the umbilicus surrounded by a striated callus;" nor is "the last whorl rounded at the periphery;" nor does "the columella end anteriorly in one or two tubercles." The umbilicus, which is almost covered by the reverted lip, is surrounded by a blunt angulation, there is a slight keel at the periphery, and the pillar thins out and passes over into the basal lip gradually.

35. *Trochus* (*Monilea*) *belcheri*, Phil.

Trochus belcheri, Philippi, Zeitschr. f. Malak., 1849, p. 148.
„ „ Philippi in Conch. Cab. (ed. Küster), p. 302, sp. 394, pl. xliv. fig. 3.

Station 172. July 22, 1874. Lat 20° 58′ S., long. 175° 9′ W. Inside the reef at Tongatabu, off Nukalofa. 18 fathoms. Coral mud.

Habitat.—"Unknown."

This species, as Philippi says, is very like *Trochus corrugatus*, Koch, indeed very much more so than the figures indicate, but is unquestionably different. It seems to be rare, being apparently absent from the Paris collection, and I failed to find it at the British Museum. One of the specimens from Delessert's collection in the Geneva Museum is Koch's, not Philippi's species. The oblique cross hatchings and the spiral threads present some variation.

36. *Trochus (Solariella) prodictus*, Fischer.

Margarita angulata, A. Adams (not of Sowerby, Eichwald, or Münster), Proc. Zool. Soc. Lond., 1851, p. 190, sp. 18.
Monilea (Solariella) angulata, A. Adams, Genera, p. 431.
Minolia angulata, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 217, No. 195.
Trochus prodictus, Fischer in Kiener's Iconog., p. 395, sp. 240, pl. cxviii. fig. 1.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Sandwich Islands (Adams), Port Jackson (Angas).

Solariella is a MS. generic name of Searles Wood, published in his Catalogue of Crag. Moll. in 1842, and suppressed by him as a mere synonym of *Margarita* in his Crag. Moll. (Pal. Soc.), vol. i. p. 134. Adams revives it in his "Genera" as a subgenus of *Monilea*, with which it has nothing specially to do; but it may not be amiss to retain it for the Australian group of Trochidæ, whose brilliant colours distinguish them from the Margaritas. As for the name *Minolia* proposed by Adams in the Annals and Magazine of Natural History for 1860, p. 336, apart from the very serious objection of its similarity to *Monilea*, there really is not room for it as distinct from *Solariella*, the connecting links between these being already too numerous as species are now grouped. (See Carpenter, Mollusca, West Coast of North America, British Association Report, 1863, p. 653.)

A good deal of confusion exists in collections between this species and *Trochus delicatus*, A. Ad., which is more tumid, especially on the base, larger, with a smaller umbilicus, higher, with a narrower shoulder below the suture, and the angle there not so sharp.

The propriety of the change in Adams' name will be variously estimated in accordance with the importance attached to the subdivisions of Linne's genus. Of course any one who esteems them as worse than useless can have no hesitation in accepting Fischer's name.

37. *Trochus (Solariella) vitiligineus*, Menke.

Trochus vitiligineus, Menke, Moll. Nov. Holl., p. 18, No. 73.
" " Philippi, Conch. Cab. (ed. Küster), p. 176, sp. 213, pl. xxviii. fig. 2.
Margarita nitiligineus (sic), A. Adams, Proc. Zool. Soc. Lond., 1851, p. 190, No. 12.
Monilea (Solariella) vitiliginea, Adams, Genera, vol. i. p. 431.
Minolia vitiliginea, Angas, South Austr. Moll., Proc. Zool. Soc. Lond., 1865, p. 182, No. 167.
" " Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 217, No. 194.
Trochus vitiligineus, Lischke, Japan. Meer. Conch., vol. ii. p. 86.
" " Fischer in Kiener's Iconog., p. 397, sp. 242, pl. cxviii. fig. 3.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York, North-Eastern Australia. 8 fathoms. Coral mud.

Habitat.—From St Vincent's Gulf in South Australia (Angas), to the Philippines and Japan (Lischke).

The species seems to vary a good deal, especially in the sculpture of the umbilicus, the cord surrounding which is sometimes very strong and yellow in colour, in other specimens is weak and pale.

Dr Fischer remarks that the extension of this species to the Philippines and Japan needs confirmation. Such confirmation is helped by the locality obtained for it by the Challenger, since the presence of North-east Australian species in seas further north is a well-established fact; whereas the number of species common to the Asiatic sea-board and to *South* Australia is very small indeed, though more of such cases are being recognised than was formerly admitted to be possible.

38. *Trochus (Solariella) philippensis*, Watson (Pl. VI. fig. 10).

Trochus (Solariella) philippensis, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 92.

Station 161. April 1, 1874. Lat. 38° 22′ 30″ N., long. 144° 36′ 30″ E. Off the entrance to Port Philip, Australia. 33 fathoms. Sand.

Shell.—Rather like *Trochus tumidus*, Mont., but with a broader base, more conical, and less scalar, with a large open umbilicus and brilliant colour. *Sculpture:* The shell is gathered into small regular flat puckers below the suture; these are weaker on the last whorl. The whole surface is covered with very fine oblique longitudinal striæ. *Spirals:* There are very numerous fine, sharp, undulating scratches, which on the middle of the base are shallower and wider apart, but toward the umbilicus again become sharper and more crowded. Within the umbilicus are four or five somewhat beaded spirals, the first and strongest of which forms an umbilical carina. *Colour* faintly iridescent all over, creamy white, flecked with zigzag lines of crimson, which on the upper whorls are narrow and regular, on the penultimate whorl are remote, and on the last are irregular, broken, and crowded. On the base there are eleven to twelve elongated radiating crimson spots. The first three whorls are a pale orange-yellow. *Spire* rather high, scalar. *Apex* small, bluntly pointed. *Whorls* $6\frac{1}{2}$, with a flat shelf below the suture, angulated at about one-fifth of their breadth, and rounded from the angulation to the suture. The last whorl is bluntly angulated at the edge of the rounded base. *Suture* strong, being slightly impressed and very distinctly marked by the angle at which the adjoining whorls meet. *Mouth* little oblique, round. *Outer lip* thin and sharp, not at all expanded. *Inner lip* thin and sharp, a very little patulous on the pillar, where it also retreats a little, so as to form a slight open sinus; brilliantly iridescent within. *Umbilicus* wide and pervious, and deeply impressed at the suture, which runs spirally up to the apex within. H. 0·275 in. B. 0·33, least 0·3. Penultimate whorl, 0·085. Mouth, height 0·15, breadth 0·14.

There is a *Margarita tasmanica* of Tenison Woods, from Bass Strait, which, from his description, seems to present some features of resemblance to this species; but he says of it that the upper part

of the whorls is not angulated. Than *Trochus* (*Solariella*) *prodictus*, Fisch. (= *angulatus*, A. Ad.), this Port Philip species is much larger and higher. It approaches most nearly to *Trochus* (*Solariella*) *bellula*, Ang.; but that is larger, with the same number of whorls, has a transparently white apex, has the shoulder below the apex not flat nor drooping outwards, but gouged out as a concave depression; the last whorl is more spread out, and the base is without colour; the umbilicus is wider and less deep, and the spiral which defines it is stronger, while there are no other spirals within it; the whole surface of the shell, too, is smooth, with a few strong clean-cut impressed spirals, instead of being closely and minutely fretted with spirals all over.

39. *Trochus* (*Solariella*) *lamprus*, Watson (Pl. VI., fig. 9).

Trochus (*Solariella*) *lamprus*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 93.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Shell.—Depressedly conoidal, angulated at the periphery, rounded on the base, umbilicated, polished, finely sculptured, solid. *Sculpture:* The glossy surface is closely fretted with fine, curved, oblique, longitudinal scratches, crossed by very similar but slightly stronger and more equal spirals; these both are stronger near the suture and feebler on the base, where, indeed, the spirals almost disappear. *Colour* pellucid pale yellowish white, with many narrow, opaque, pure white spirals, which are flecked with fine zigzag brown longitudinal lines, aggregated in spots, and most abundant near the suture. The strongest opaque spiral is at the periphery, and on it are minute linear interruptions of the fundamental colour, and very regularly recurring little brown spots, which are about half the width of their interspaces. On the base the brown spots are very few and minute. There is very little iridescence anywhere. *Spire* low. *Apex* minute and projecting. *Whorls* 6, depressed, equally curved, slightly angulated at the periphery, more flattened on the base than above, of regular, but rather rapid increase. *Suture* slightly impressed. *Mouth* small, rounded. *Outer lip* thin and perfectly simple. *Inner lip* porcellanous, thick and flat, projecting in a minute ear across the umbilicus, and having toward the point of the pillar a broad backward bevel, cut out of the thickness of the shell round the umbilicus. *Umbilicus*, a shallow open depression, with a deep narrow hole in the centre. H. 0·15 in. B. 0·24, least 0·2. Penultimate whorl, 0·05. Mouth, height 0·13, breadth 0·1.

The specimen from which this species is described is not quite full-grown. The whorls are not angulated, nor the umbilicus open, nor is the colour ruddy, nor the texture thin, as in *Trochus* (*Solariella*) *prodictus*, Fisch. From *Trochus* (*Solariella*) *vitiligineus*, Mke., from which it differs in these respects, but in a less degree, it may further be distinguished by its greater depression, its smaller mouth, its weaker sculpture, its greater glossiness, its feebler iridescence, and its minute umbilicus.

40. *Trochus* (*Solariella*) *albugo*, Watson (Pl. VI. fig. 8).

Trochus (*Solariella*) *albugo*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 94.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Shell.—Small, conoidal, with a tumid conical base, bluntly bicarinate, umbilicate, with a resinous lustre, brown, flecked with crimson and white. *Sculpture:* Very many irregular oblique faint lines of growth, with a few remote rounded spirals, which are very weak above, stronger on the base, and of which two at the periphery form a feeble double carina. *Colour:* A pale transparent resinous brown, flecked below the sutures and at the periphery with alternate spots of white and crimson; the latter colour runs in minute zigzag streaks down the shell; there are also, both above and on the base, a few delicate spirals of alternate crimson and white specks. *Spire* rather low, with curved profile lines and a blunt round apex. *Whorls* 5, rounded and sloping above, flat at the periphery, and tumid on the base. *Suture* linear and very slightly depressed. *Mouth* rather large, round. *Outer lip* thin. *Inner lip* thin, hollowed out backwards, and bending somewhat across the umbilicus. *Umbilicus* a broad shallow funnel, contracting to a small deep hole. H. 0·125 in. B. 0·2, least 0·15. Penultimate whorl, 0·05. Mouth (in consequence of obliquity), height 0·125, breadth 0·1.

This species differs from *Trochus* (*Solariella*) *lamprus*, W., in being higher, with a larger mouth, and most of all in colour and in sculpture. It is perhaps most like *Trochus* (*Solariella*) *vernicosus*, Gould, but that is flatter and has a much wider umbilicus. The name is derived from the white spots which fleck the shell.

41. *Trochus* (*Gibbula*) *glyptus*,[1] Watson (Pl. VI. fig. 6).

Trochus (*Gibbula*) *glyptus*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 694.

Station 164B. June 13, 1874. Lat. 34° 13′ S., long. 151° 38′ E. Off Sydney. 410 fathoms. Green mud.

Shell.—Like *Trochus magus*, L., but carinated, higher, less scalar, and much more delicately and richly sculptured. *Sculpture:* Spirals—a flat shoulder below the suture is followed by an angulation, on and below which is a double row of smallish, round, but pointed tubercles, which are remote from one another but run in pairs on the two rows. The tubercles in each row are connected by a slight rounded thread. On the second, third, and fourth whorls these rows coalesce into one; on the last whorl they are about 0·05 inch apart. At the periphery is a strong angulation bearing a sharp carina. About 0·05 inch above this is a spiral thread, which, as well as the carina, is ornamented with delicate, sharp, laterally-compressed beads separated from one another by about twice their own size.

[1] γλυπτός, carved.

Those on the upper spiral are rather the larger; the middle of the whorl for about 0·1 inch is bare. On the base there are five closely-beaded threads, of which the inmost and strongest defines the umbilicus. Between the outermost and the carina is a broad slightly sunken furrow. The carina meets the outer lip and appears above the suture. Longitudinals—the upper whorls are ribbed, but the ribbing gradually breaks into the double row of paired tubercles, and the link uniting the pairs in the two rows becomes very feeble. There are besides many distant, irregular, loose skin-like puckerings which follow the lines of growth; they disappear on the spiral threads. The whole surface is further roughened by microscopic flexuous wrinklings. *Colour* yellowish white on the thin calcareous layer overlying the nacre. *Spire* high, a little scalar. *Apex* small and sharp. *Whorls* 8, of regular increase, a little rounded, angulated at the carina, rather tumid on the base, with a wide umbilicus. *Suture* angulated and well defined, but a little filled up by the carina of the overlying whorl. *Mouth* (apparently) perpendicular, semioval. *Outer lip* well rounded. *Pillar-lip* a little bent over on the umbilicus, and then advancing rather straight towards the left, angulated and slightly toothed at the point of the base where the umbilical beaded thread joins it. *Umbilicus* a wide deep funnel, with a deep spiral staircase at the junction of the whorls. H. 0·68 in. B. 0·72, least 0·61. Penultimate whorl, 0·19. Mouth, height 0·32, breadth 0·32.

This beautiful species is unfortunately present in only one dead and chipped specimen. The name given to it is expressive of the singular beauty of its sculpture. It is more like *Trochus magus*, L., than any other species I know, but is obviously very different in all details of form and sculpture. It has some resemblance to *Trochus ottoi* Phil., but is higher and narrower; that species has a broadly open but immediately contracted umbilicus, which rather resembles a scoop than a funnel; its whorls are much less tumid above, and are less sculptured; they slope downwards conically from the suture with only one feeble and feebly tubercled thread between the suture, to which it lies near, and the peripheral thread.

42. *Trochus* (*Gibbula*) *zonatus*, Wood (Pl. VI. fig. 7).

Trochus cingulatus, Mühlfeldt, Mag. d. Gesellsch. Naturf. Freunde, Berlin, vol. viii., 1818, pl. ii. fig. 11 (but not of Brocchi).
,, *zonatus*, Wood, 1828, Index Test. Suppt., p. 221 (ed. Hanley), pl. v. fig. 34.
,, *cingulatus* (*de novo*), Menke, Synopsis Method., pp. 55, 143.
,, *menkeanus*, Philippi, Abb. und Besch., vol. i. p. 91, sp. 5, pl. xxi. fig. 6, and vol. ii. p. 39.
,, *zonatus*, Krauss, Südafrik. Moll., p. 97, sp. 8.
,, ,, Philippi, Conch. Cab. (ed. Küster), p. 287, sp. 372, pl. xlii. fig. 8.
,, ,, v. Martens, Südafrik. Moll. in Jahrb. d. Deutsch. Malak. Gesellsch., 1874, p. 129, No. 97, and p. 142.
,, *leaensis*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 90.

October–December 1873. Sea Point, Cape Town.

Habitat.—False Bay and Table Bay, Cape of Good Hope (v. Martens).

I described this in my Preliminary Report (*loc. cit. supra*) as *Trochus lcaensis*, after careful comparison of the Challenger shell with the British Museum specimens of *Trochus zonatus* (Wood), believing that there were points of difference sufficient to separate it from these. I have since had an opportunity of examining a very large series of specimens brought by a friend from the Cape, and I am satisfied that the Challenger shell belongs to Wood's species.

43. *Trochus* (*Margarita*) *brychius*,[1] Watson (Pl. V. fig. 7).

Trochus (*Margarita*) *brychius*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 699.

Station 152. February 11, 1874. Lat. 60° 52′ S., long. 80° 20′ E. About 900 miles S.E. of Kerguelen. 1260 fathoms. Diatom ooze.

Shell.—Globosely depressed, with a small high spire, very thin, rather opaque, rough, dull, and slightly iridescent. *Sculpture:* The whole surface looks as if a rough epidermis were gathered into close, minute, obliquely longitudinal puckerings, with stronger folds about 0·003 in. broad and 0·005 in. apart. These folds tend on the last whorl to disappear, except near the suture and toward the umbilicus. They are crossed by fourteen to sixteen fine round spiral threads, which at the crossing of each fold rise into knots. On the upper surface of the body-whorl they become very faint; there are four on the penultimate whorl, the first being remote from the upper suture, the last close to the lower suture. Besides these, the surface is microscopically wrinkled spirally. *Colour* a dead slightly greyish white, which, toward the mouth, especially when wet, is faintly shot with a green and pink iridescence. *Spire* rather high, the earlier whorls being small and very much twisted out, so as to rise above one another by almost their entire height. The *apex* is round and blunt, and terminates abruptly, but all the earlier whorls have lost their outer layer. *Whorls* 5, very round, of very regular but rather rapid increase. *Suture* deeply and sharply impressed. *Mouth* rather oblique, round, not descending, brilliantly iridescent within. *Outer lip* thin, turning down to meet the pillar-lip, and carried across the short junction with the body by a thin nacreous callus, which is continued within, and is, in fact, the completion of the whorl into a tube. *Inner lip* slightly thickened, curved, just barely reflected. *Umbilicus* wide and pervious, exposing all the whorls, and strongly cross-hatched within by the spiral and longitudinal threads. *Operculum* very thin, clear, and bright, with about eight faintly-defined turns, and marked with microscopic concentric lines. H. 0·64 in. B. 0·87, least 0·62. Penultimate whorl, 0·18. Mouth, height 0·43, breadth 0·4.

This shell slightly recalls *Helix ericetorum*, Müll., but much more closely resembles some of the West Indian land-operculates, such as *Aulopomâ*. With its semi-continuous peristome it very much

[1] βρύχιος, the deep sea.

recalls a *Cyclostrema*, all the more so that it is less pearly within, less nacreous and more chalky, and less globosely conoidal than Margaritas usually are; but I have no doubt that it is a Margarita. *Trochus* (*Margarita*) *umbilicalis*, Brod. and Sow., is vaguely like, but is very obviously different: the apex is not so exserted as here, the whorls are of much more rapid increase, and form a much larger though lower spire; the last whorl is proportionally much more tumid and above is more flattened, the suture is much more oblique, the umbilicus is very much smaller and more covered by the inner-lip, and the hard, polished, buff-coloured porcellanous outer layer of the shell (which is very like that in *Trochus* (*Margarita*) *expansus*, Sow.) is very unlike.

44. *Trochus* (*Margarita*) *charopus*,[1] Watson (Pl. V. fig. 6).

Trochus (*Margarita*) *charopus*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 700.

Station 149J. January 29, 1874. Lat. 48° 43′ S., long. 69° 15′ E. Kerguelen Island. Off Cumberland Bay. 105 fathoms. Volcanic mud.

Var. *cæruleus*, Watson (Pl. V. fig. 6b).

Var. *cæruleus*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 701.

Station 151. February 7, 1874. Lat. 52° 59′ 30″ S., long. 73° 33′ 30″ E. Off Heard Island. 75 fathoms. Volcanic mud.

Shell.—Globosely conical, like a *Cyclophorus*, thin, translucent, umbilicated, iridescent, banded. *Sculpture:* Of spiral threads there are from twenty-five to thirty-five, sharply projecting, rounded, and fine on the last whorl; of these, from three to seven are feebler than the rest; those on the base are continued within the mouth. The interstices are much broader than the threads. The whole surface is also fretted by microscopic spirals and stronger longitudinals, which follow the oblique lines of growth. Of the threads, six to thirteen appear on the penultimate whorl; they begin with the second whorl, and there the longitudinals are rather disproportionately strong and regular. The embryonic apex is faintly but coarsely tubercled. *Colour* yellowish white, shot on the upper side with a dark iridescence; the spirals are black, clouded, and broken with oblique longitudinal streaks of white. The *spire* is high and scalar. The apex, porcellanous and scarcely iridescent, is small, high, and mammillate, and consists of the one embryonic whorl, which is a little turned up on its side. *Whorls* 6, of gradual and regular increase, rounded, near the apex a little angulated by one of the spirals. *Suture* well marked, angulated, but not sharply so. *Mouth* rather oblique, round, hardly angulated at the upper corner, not in the least descending, brilliantly iridescent within and showing the coloured spirals of the outside. *Outer lip* thin, slightly puckered at the spirals, a little thickened on the base. *Inner lip* thickened and reflected, especially at its junction with

[1] χαροπός, light blue.

the body, where it almost covers the umbilicus. The *pillar* is much curved, and thins gradually out to its junction with the base. The *umbilicus* is large and funnel-shaped on the base, deep, but small further in, contracted by a spiral white pillar-pad, and more than half covered over by the pillar-lip. *Operculum* rather thin, horny, yellow, with ten to twelve very gradual turns, which are strongly defined by a thickened line; it is feebly marked with concentric and with radiating lines. H. 0·77 in. B. 0·78, least 0·66. Penultimate whorl, 0·2. Mouth, height 0·4, breadth 0·4.

There is a *Margarita striata*, Leach (*nec* Linn. *nec* Brod.), which this resembles, but the Kerguelen species is very much more flattened and broader, and much more contracted in the spire.

The variety (fig. 6b) differs from the type in having only four spiral threads above the periphery, while on the base below the peripheral thread the threads are also fewer, and are flattened out till they are barely parted by narrow lines of iridescent white. With the exception of these and the white umbilicus, the base is of an intense blue-black grey. The comparative absence of the spirals on the upper part of the whorls gives a flatness to the aspect of the shell below the suture, while the strength of the second and fourth spirals gives an angulation to the whorls that is apt to mislead the eye, the more so that the only specimen of this variety has the whole spire completely covered with Polyzoa. In spite, however, of its deceptive appearance, I am persuaded that this is only a variety of *Trochus charopus*, the more so that the markings on the embryonic whorl are identical.

In form this variety especially recalls *Margarita polaris*, Beck (Geneva Mus., Coll. Delessert), as also in its distant rather sharp spirals and half-covered umbilicus, but it is more depressed on the base and flattened below the suture; the whorls are of much more rapid increase, the spirals on the base are very much more numerous, and the shell is brilliant in polish and in colour.

45. *Trochus* (*Margarita*) *pompholugotus*,[1] Watson (Pl. V. fig. 9).

Trochus (*Margarita*) *pompholugotus*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 702.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Depressedly globose, with a low turreted spire, thin, opaque, chalky, rough, umbilicate. *Sculpture:* There are of spirals on the last whorl about forty, low, rounded, very unequal, some being very minute, one or two above the periphery stronger than the rest; the lowest of all is much the strongest, and defines the umbilicus, within which the whole sculpture increases in distinctness; on the penultimate whorl there are about twelve spirals fully stronger than on the last. The furrows are broader than the threads, but as they widen are occupied by a minute intermediate thread. Longitudinally these spirals and furrows are crossed by much finer and sharper oblique threads, which in general are much narrower than their interstices; but towards the mouth, where all the sculpture

[1] πομφολυγωτός, bubble-shaped.

becomes feebler, these threads become extremely numerous and crowded. *Colour* yellowish chalky white over brilliant nacre. *Spire* not much elevated, but a little scalar. *Apex* eroded. *Whorls* 5, rounded, of rapid increase, inflated on the base. *Suture* impressed near the apex, while towards the mouth it becomes filled up, and is finally marginated, by the last whorl lapping up rather coarsely on the previous one. *Mouth* rather oblique, a little higher than it is broad, slightly flattened above, and a very little angulated at the insertion of the outer lip. *Lip* thin, a very little reflected on the umbilicus, porcellanous on the edge, with a very slight pearly marginal callus, which is continuous across the body, and nacreous within. *Umbilicus* large, funnel-shaped, quickly contracting, but leaving the whole inner spire visible. H. 0·38 in. B. 0·4, least 0·33. Penultimate whorl, 0·1. Mouth, height 0·23, breadth 0·2.

Both in form and texture this species is extraordinarily like a depressed *Cyclostoma*. I have given it its name, in the absence of marked features, from its slight resemblance to a bubble. It has some resemblance to *Trochus rhina*, Wats., when, as sometimes in that species, the sculpture is exceptionally obsolete; but the sculpture is still very obviously different, and the form is globose, not, as in that species, high and conical.

46. *Trochus* (*Margarita*) *rhina*,[1] Watson (Pl. V. fig. 1).

Trochus (*Margarita*) *lima*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 703 (*nec* Phil.)

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. W. of Azores. 1000 fathoms. Pteropod ooze.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 fathoms. Volcanic mud.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. San Miguel, Azores. 1000 fathoms. Volcanic mud.

Shell.—Conical, with a broad and tumid base and a wide narrowed umbilicus; surface cross-hatched like a file; when fresh, translucent with a pearly sheen. *Sculpture:* Spirals—there are three to five slightly raised remotely beaded threads, of which one lies a little below the suture, one at the periphery forming a carina, of which the beads are much smaller and closer set, sometimes evanescent; one, with beads like the first, defines the umbilicus, within which there is a strong spiral ridge; and the whole surface is covered with fine rather sharp threads, whose partings are twice as broad as themselves. Of these finer spirals, the one which meets the outer lip often rises into prominence and defines the base, while another above the carina sometimes stands out more strongly and more beaded

[1] λίμη, a file. The preoccupation by Philippi of the name I had chosen necessitates this change from *lima* to its Greek equivalent.

than the rest. Longitudinals—the whole surface is close-set with these, which are crossed by the spirals, than which they are broader but less sharp, closer-set, and more irregular and interrupted, especially near the upper line of tubercles and near the umbilicus. *Colour* a bluish white when alive, with a translucent calcareous layer through which the nacre shines. *Spire* high, a little scalar. *Apex* small, a little flattened, with the embryonic $1\frac{1}{4}$ whorl barely projecting in the middle. *Whorls* 6–7; the last is of rapid increase, full rounded and a little tumid; the preceding ones are a little roundedly shouldered below the suture, flat on the contour, angulated at the carina, and slightly contracted into the suture; the apical whorls are simply rounded and longitudinally ribbed. *Suture* is linear, but strongly, not acutely defined by the perpendicular rise of the whorl above it and the slight sloping shoulder below. *Mouth* round, scarcely oblique, with a translucent porcellanous edge, and pearly within. *Outer lip* not descending, sharp; its inner edge is bevelled outwards at the expense of the pearly layer. *Pillar-lip* bends over the umbilicus, is a little reverted, and expands into a tooth at the intra-umbilical ridge. *Umbilicus* funnel-shaped, wide, pervious, but narrowed within by the spiral ridge. *Operculum* of very many narrow whorls, which on their outer edge overlap as a narrow gleaming flange. H. 0·32 in. B. 0·32, least 0·28. Penultimate whorl, 0·09. Mouth, height 0·18, breadth 0·18.

This is a much larger species than *Trochus* (*Margarita*) *cinereus*, Couth., from the North Atlantic, much higher, much more conical, much more exquisitely sculptured, suture more impressed, base more tumid and not angulated at the edge, umbilicus larger.

Than *Trochus* (*Margarita*) *amabilis*, Jeffr., it is, of course, still larger, less conical, less angulated, the sutural impression is not like a rounded gouged-out line as it is there, the base is not flattened, and the whole style of sculpture is totally different.

The measurements given above are taken from an almost exceptionally fine specimen from Station 78.

47. *Trochus* (*Margarita*) *ægleës*,[1] Watson (Pl. V. fig. 10).

Trochus (*Margarita*) *ægleës*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 704.
Margarita ægleës, Dall, "Blake" Dredgings, Bull. Mus. Comp. Zool., vol. ix. p. 40.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—Gulf of Mexico. 287 to 888 fathoms (Dall).

Shell.—Broadly conical, high, with a very large umbilicus, ornamented with rows of tubercles, carinated. *Sculpture:* Spirals—there is a row of small round pointed

[1] ἀγλήεις, beautiful.

tubercles a little below the suture. The carina is double, formed by two rather remote tubercled threads, the lower of which runs to the outer lip. Below this one is a broadish furrow and slightly beaded thread, which, towards the mouth, projects so as to become a third carina. The centre of the base has another slightly beaded thread; and another, formed of remote rounded tubercles, defines the umbilicus, within which is a very slight furrow and an ill-defined ridge. Longitudinals—the apical whorls are ribbed, but the ribs gradually break into the scarcely connected tubercles of the last whorl. The lines of growth are hardly perceptible, except on the base. *Colour* pure white when weathered, but apparently slightly brownish when fresh, with a pearly nacre below the thin calcareous surface-layer. *Spire* high, very slightly scalar. *Apex* sharp, minute, flattened on the one side, with the very small embryonic $1\frac{1}{4}$ whorl rising sharply on the other. *Whorls* 7, of regular increase; the last is small, from the large part of it cut out by the umbilicus; they are flatly conical and slightly scalar. *Suture* linear, but strongly defined by the right-angled junction of the whorls. *Mouth* oblique, much inclined to the axial line, rectangularly rounded, the pillar and outer lip being parallel. *Outer lip* thin and broken, not descending. *Pillar-lip* shortly but flatly bent over the umbilicus, and here it is patulous and sinuated, it then advances in a straight line towards the base. It is toothed in the middle by a strongish spiral protuberance, at which point it projects: but from this to the junction with the base it is thin and retreats. *Umbilicus* very large, funnel-shaped, and pervious. H. 0·27 in. B. 0·3, least 0·25. Penultimate whorl, 0·08. Mouth, height 0·1, breadth 0·15.

This very beautiful species is well defined by its exactly conical form and very large umbilicus, which cuts the whole body out of the inside of the last whorl, narrowing the base to an extraordinary extent. The young shells are excessively like those of *Trochus* (*Ziziphinus*) *tiara*, Wats., but are flatter, broader, and more umbilicated.

Mr Dall (*loc. cit. sup.*) considers *Margarita lamellosa*, Verr. and Sm., to be this species. Dr Gwyn Jeffreys again (Proc. Zool. Soc., 1883, p. 98) identifies with it *Margarita regalis*, Verr. and Sm. Both of these identifications can hardly be right, and I have therefore quoted the synonymy of neither author. As to the identity of *Margarita regalis*, Verr. and Sm., with *Trochus ottoi*, Phil., which Dr Gwyn Jeffreys asserts, I express no opinion. So far as I have had opportunity of examining specimens, they seem to me very fairly distinct, though offering resemblances suggestive of transitional links. Mr Dall, who has had very many specimens before him, says that *Trochus æglees* is very variable, and this Dr Gwyn Jeffreys seems quite to confirm.

48. *Trochus* (*Margarita*) *clavatus*,[1] Watson (Pl. V. fig. 8).

Trochus (*Margarita*) *clavatus*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 705.

[1] *Clavus*, a nail, with an allusion to the prickles which stud the shell.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

(?) Station 120. September 9, 1873. Lat. 8° 37′ S., long. 34° 28′ W. Off Pernambuco. 675 fathoms. Red mud.

Shell.—Small, conical, with a high spire and a tumid base, a round mouth, and a deep umbilicus, and covered with sharp prickles. *Sculpture:* Spirals—there are several small threads, two of which, of equal strength and prominence, angulate the whorls—one at the basal contraction, the other about half-way up the whorl; on the base they are somewhat closer set. The outer lip does not meet the carinal thread, but the one below. Longitudinals—the whole surface is crossed by close-set, slightly oblique narrow laminæ, which, in crossing the spirals, rise into sharp vaulted prickles whose faces are turned towards the mouth. *Colour* white, with a pearly lustre. *Spire* very high. *Apex* minute, with the small embryonic $1\frac{1}{4}$ whorl rising from a minute flat. *Whorls* $6\frac{1}{4}$, angulated and narrow in the spire, but the last inflated and expanded. *Suture* deeply impressed, somewhat depressed, and very strongly defined. *Mouth* perpendicular, round, slightly pointed on the base, and angulated at the upper carina. *Outer lip* sharp, advancing far across the body towards the pillar-lip. *Pillar-lip* depressed upon the umbilicus, then rounded and sinuated, slightly toothed at the point of the pillar. *Umbilicus* wide and deep, but internally narrowed. H. 0·17 in. B.0·13, least 0·1. Penultimate whorl, 0·03. Mouth, height 0·07, breadth 0·07.

The peculiarly high narrow spire and the vaulted prickles are very characteristic features of this species, none of the specimens of which are adult. When full grown there would probably be an additional whorl, which would add a broad base to the high narrow spire. There seems to be some variation in the number of the spirals. I have put a query to the specimens from Pernambuco, because, though identical in other respects, the embryonic whorls are slightly larger and more tumid. The curves of the mouth-edge have some suspicion of an infra-sutural sinus, and the form of the pillar is also suggestive of *Basilissa*, but the form of the mouth is wholly unlike that genus.

49. *Trochus* (*Margarita*) *rhysus*,[1] Watson (Pl. V. fig. 4).

Trochus (*Margarita*) *rhysus*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 706.

Station II. January 13, 1873. Lat. 38° 10′ N., long. 9° 14′ W. Off Setubal. 470 fathoms. Green mud.

Station 23. March 15, 1873. Lat. 18° 24′ N., long. 63° 28′ W. Off Sombrero Island, West Indies. 450 fathoms. Pteropod ooze.

[1] ῥυσός, wrinkled.

Shell.—Small, conical, scalar, with rounded base and large umbilicus, sculptured. *Sculpture:* Spirals—there is a double, tubercled carina, of which the basal one meets the outer lip; the upper and stronger angulates the whorl about two-fifths from the base; less than one-fifth from the suture is a shoulder formed by a row of stronger remoter tubercles scarcely connected by a thread. On the base are two feebly beaded threads, another strongly beaded defines the umbilicus, close within which lies another delicately and remotely beaded. Longitudinals—the top whorls are strongly ribbed, but further down these ribs break into tubercles and become disconnected; but traces of these longitudinals remain here and there. The lines of growth are very faint. *Colour* white, with a pearly lustre. *Spire* high, scalar. *Apex* not fine, rounded, with the inflated 1¼ embryonic whorl standing out prominently. *Whorls* 6, flat below the suture, angulated at the first spiral, below which the profile line is flatly conical; it is angulated at the second spiral, and then contracts into the suture below. *Suture* acutely angulately impressed. *Mouth* round, angulated at the front of the pillar. *Pillar-lip* slowly and slightly bent over the umbilicus. *Umbilicus* open, funnel-shaped, internally scored with minute longitudinal ribs. H. 0·25 in. B. 0·21, least 0·18. Penultimate whorl, 0·05. Mouth, height 0·1, breadth 0·09.

The specimen from which I have described this is in bad condition; but the species is certainly distinct from any other known to me.

50. *Trochus* (*Margarita*) *infundibulum*, Watson (Pl. V. fig. 5).

Trochus (*Margarita*) *infundibulum*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 707.

Station 56. May 29, 1873. Lat. 32° 8′ 45″ N., long. 64° 59′ 35″ W. Off Bermuda. 1075 fathoms. Coral mud.

Station 146. December 29, 1873. Lat. 46° 46′ S., long. 45° 31′ E. Off Marion Island. 1375 fathoms. Bottom temperature 35·6° Fahr. Globigerina ooze.

Animal of a uniform light colour. *Foot* broad, bluntly pointed behind. *Appendages* 5, probably 6, large, between which the membrane above them is edged with many small ones.

Shell.—Conical, with a tumid base, carinated, umbilicated, thin, translucent, pearly. *Sculpture:* Spirals—on the upper whorls 2, on the body whorl 7–8, pretty strong, but fine beaded threads. The first lies remote below the suture, and is sparsely ornamented by

longitudinally produced, high and pointed, tubercles; it forms a shoulder on the whorl. The second projects strongly and sharply at the periphery and forms the carina; it and those below are delicately fretted with close-set small beads. The third, which meets the outer lip, lies within the contraction of the base. The last two are closer than the rest, which, however, are sometimes brought closer by the additional thread which appears among them. The one which defines the umbilicus is more sharply beaded than the rest. Longitudinals—below the suture and near the umbilicus the surface is sharply but delicately puckered, and these puckerings, strong in the early whorls, are in the later faintly continued across the whorls as lines of growth. *Colour* yellowish white, with a brilliant nacreous sheen shining through the thin superficial calcareous layer, which becomes more opaque in drying. *Spire* high, scalar. *Apex* minute, flattened, with the minute bulbous embryonic $1\frac{1}{4}$ whorl projecting on one side. *Whorls* 8, of rapid increase, rounded, but angulated by the projection of the spirals, very tumid on the base. *Suture* linear, but strongly defined by the contraction of the suprajacent whorl and the flat shoulder of the one below. *Mouth* very slightly oblique, round, but on the pillar flattened, and at the point of it angulated slightly; nacreous within; across the body there is no pad, but the shell is eroded, and this erosion has the appearance of a thin callus. *Outer lip* thin, not descending. *Pillar-lip* slightly patulous, bending flatly over the umbilicus, and then advancing in a straight line to the point of the pillar, where it is slightly angulated just where the beaded umbilical spiral ends. *Umbilicus* funnel-shaped, rather open, but a good deal contracted within, sharply scored with the lines of growth. *Operculum* yellow, horny, very thin, of 7 to 8 whorls. H. 0·81 in. B. 0·65, least 0·59. Penultimate whorl, 0·2. Mouth, height 0·37, breadth 0·35.

This beautiful species, of very singular aspect, recalls in a very general way the form of *Turcica monilifera*, A. Ad., but differs from that in its rounded contours, strongly contracted suture, umbilicus, and straight untoothed pillar. It resembles in form *Margarita aspecta*, A. Ad., but that is less tumid, is carinated, its umbilicus is much smaller, the spirals are many more, and they are not tubercled.

It is very like *Trochus ottoi*, Phil., a fossil from Messina, lately taken alive in abundance by Professor Verrill off the New England coast in 115 to 500 fathoms, and published by him as *Margarita regalis*. *Trochus infundibulum* may after all be only a variety, but compared to that this is larger, higher in proportion to breadth, has the base much more tumid, and the longitudinals far weaker. In *Trochus ottoi*, Phil., these longitudinals are very strong, and make sharper, higher, crisper nodules on the spirals; that species, too, has not the subsutural flat with its radiating bars and its border of tubercles, and has not the spiral uniting that first row of tubercles. As to the intra-umbilical spirals, they vary astonishingly. Dr Gwyn Jeffreys writes (January 4, 1882), "I quite agree with you that your *Trochus infundibulum* is a different species from *Trochus ottoi*, Phil., the *Margarita regalis*, Verr. and Sm." Philippi says that his species is "simillimus" to *Turbo cinereus*, Couth., "qui cingulis transversis elevatis pluribus nodulisque minus distinctis unice differt" (Enum. ii. 227). I confess that I fail entirely to see the resemblance.

The presence of this species at two such separate localities as Bermudas and Marion Island, between the Cape and Australia, is interesting.

51. *Trochus* (*Margarita*) *illotus*,[1] n. sp. (Pl. XVII. fig. 3).

Station 304 (?). December 31, 1875. Lat. 46° 53′ 15″ S. Long. 75° 12′ W. North-west Patagonia. 45 fathoms. Green sand.

Shell.—Conical, with a tumid base, a scalar spire, and an impressed suture, uncarinated, umbilicated, sharply spiralled, thin, brilliantly nacreous, but with a squalid and dirty surface. *Sculpture:* Longitudinals—there are dense lines of growth and remote puckerings of the surface which might be called bars if they were continuous, but except within the umbilicus they are not uniformly so; they follow the lines of growth, and are thus very oblique; they are stronger above than below the periphery. Spirals—Much more marked than the longitudinals are the equal and regularly parted sharp spiral threads which score the whole surface; of these there are two or three on the earlier whorls, and four on all the later; where they are crossed by the longitudinal puckerings, they rise into small delicate round white tubercles, which are sparse on the subsutural, and denser on the peripheral threads; the four spiral threads on the base are feebly dotted, but the two which lie near the umbilicus are somewhat more strongly tubercled than any of the rest; there are none within the umbilicus. *Colour* white; a thin calcareous layer covers the brilliant nacre of the shell, but is obscured by a dirty deposit which simulates an epidermis. *Spire* high and scalar. *Apex* broken. *Whorls* 6¼ remaining, of rapid but regular increase, rounded, with a short sloping shoulder above, and constricted below; very tumid on the base. *Suture* distinct and impressed by the constriction of the whorl above it. *Mouth* very perpendicular, roundly and gibbously oval, bluntly angulated at the insertion of the outer lip, and at the point of the pillar in front, dully nacreous within. *Outer lip* thin, not descending, well arched. *Pillar-lip* with a direct edge, concave, bending a good deal over the umbilicus; it joins the basal lip at an angle just where the spiral thread on the edge of the umbilicus occurs. *Umbilicus* funnel-shaped and pervious, but a good deal contracted by the convexity of the pillar; internally it is scored by longitudinal threadlets, and the strongly impressed suture coils round it within. H. 0·62 in. B. 0·57. Penultimate whorl, height 0·14. Mouth, height 0·31, breadth 0·26.

I am haunted with the impression of having somewhere seen this species, but can come on no more definite remembrance of it. It is connected with the *Trochus ottoi*, Phil., group, and is not remote from *Trochus* (*Margarita*) *infundibulum*, W., but is quite certainly distinct.

[1] So called from its squalid appearance.

It may be observed that I have put a mark of interrogation to the station whence this species comes. The solitary specimen had been sent to Mr Henderson that he might deal with the *Pagurus* it contained. Mr Henderson, in handing it to me, expressed some doubt of the accuracy of the station-marking, as the *Pagurus* living in the shell was a North Atlantic species. The *Trochus* itself also suggests to me that locality rather than the shallow water of a South Pacific locality like Station 304.[1]

52. *Trochus* (*Margarita*) *pachychiles*,[2] Watson (Pl. V. fig. 11).

Trochus (*Margarita*) *pachychiles*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 708.

Station 201. October 26, 1874. Lat. 7° 3′ N., long. 121° 48′ E. Philippines. 82 fathoms. Stones and gravel.

Shell.—Small, conical, with the last whorl tumid, especially toward the mouth, which is extremely oblique, and has a thickened lip; carinate, widely umbilicate. *Sculpture:* Spirals—in the centre of the body-whorl is a strong carinal thread, which almost runs into the outer lip at its junction with the body, but just lies above it, and so stands out round the base of the whole earlier whorls; this thread is set with strong, sharp, remote tubercles, which become feebler and more crowded toward the mouth; half-way between the carina and the suture is another thread, set with feebler tubercles; these two threads only appear on the second regular whorl, but on the body-whorl, especially towards the mouth, many others make their appearance; a little below the carina, and issuing from the junction of the outer lip is a feebler tubercled thread, defining the base. On the base are three strong closely-beaded threads, the inmost of which defines the umbilicus, within which is a finer beaded thread, and, deep inside, a ridge. Longitudinals—all the upper whorls are crossed by strong straight ribs, forming tubercles where they cross the spirals, and leaving deep square hollows between. Only on the penultimate whorl do these become oblique and feebler, till toward the mouth they are narrow, weak, crowded, and broken. Besides these, the whole surface is roughened with small, coarse, irregular lines of growth. *Colour* dead white. *Spire* high and conical, but the tumidity of the last whorl, especially towards the mouth, greatly detracts from this; it is slightly scalar. *Apex* small. *Whorls* 6, of slow increase till the last, angular, projecting out squarely from the suture, flattened on the contour, and contracted below the carina; but the last whorl is rounded, tumid, and, toward the mouth, expanded. The base is rounded, but not inflated. *Suture* very deep and strong, from the overhanging of the carina above it. *Mouth* extremely oblique, perfectly round but for a slight flatness across the body and an angulation at the insertion

[1] The Station number is in all probability quite correct.—J. M.

[2] παχυχειλής, thick-lipped.

of the outer lip and also at the junction of the pillar-lip to the body; pearly within. *Outer lip* very slightly descending at its insertion, then in its sweep rising a little: it is scarcely angulated at the lower carina and at the point of the pillar, but it is a little sinuated at that part; it is thin on the edge, but is thickened within by a pretty strong pearly callus and outside by a slight rounded marginal varix. *Pillar-lip* is hollowed back into the pillar in a sinus, and is sharply reverted, so as to leave a minute but deep furrow behind it; this reversion ceases just before it reaches the umbilical thread, and forms a minute tooth at that point. *Umbilicus* wide and pervious, but narrowed within; its slope is scored with minute sharp curved laminæ, the remains of the old edges of the pillar-lip sinus. H. 0·18 in. B. 0·27, least 0·17. Penultimate whorl 0·04. Mouth, height 0·1, breadth 0·1.

In general aspect this is very like *Trochus* (*Margarita*) *gemmulosa*, A. Ad., but that species has the spire lower, the suture distinctly depressed, the sutural furrow is beset with close radiating striæ, the spiral threads are more numerous and crowded, the pointed tubercles on these are more frequent, and there is no varix on the outer lip. This last is a feature which gives a great peculiarity to this species; but the thickening and the patulousness of the lip are not sufficient to connect it with *Gaza*. The distinct umbilicus and the absence of a tooth narrowing the mouth separate it obviously from *Craspedotus*.

53. *Trochus* (*Margarita*) *azorensis* Watson (Pl. V. fig. 12).

Trochus (*Margarita*) *azorensis*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 710.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 fathoms. Volcanic mud.

Animal.—Dark in colour. *Operculum* rather strong, dark horn-colour, of very many narrow whorls, which on the outside are flanged with a thin, narrow, overlying border.

Shell.—Small, strong, but not thick, conoidal, high, with rounded contours, slightly angulated, scalar, sculptured, whitish, with a slightly flattened base and a small umbilicus. Sculpture: Spirals—there are very many close, unequal, irregular small furrows, which are feebler on the base and strongest near the suture, which is marginated below by a narrow smooth line round the top of the whorls. In the centre of the base is an umbilical depression with spiral threads in the bottom, and within this is a strong white porcellanous spiral cord, which almost closes the umbilicus. Longitudinals—the top of the whorls is gathered into broad rounded oblique puckers, which die out before reaching the suture or the base. Besides these, the whole surface, spiral furrows and all, is sharply scratched

with very close and numerous lines of growth. *Colour* yellowish translucent white, with a dull all-pervading nacreous gleam. The strong cord which fills the umbilicus is white, as is also the apex. *Spire* high, scalar, the separate whorls being a good deal sunk into one another, as well as flattened below the suture. *Apex* small, rounded, the minute embryonic $1\frac{1}{4}$ whorl barely projecting. *Whorls* 6, of regular increase, slightly flattened below the suture, rounded on the contour, barely contracted round their base; the last is faintly angulated at the periphery, and not much rounded on the base. *Suture* strongly marked by the contraction of the whorl above and the margination below. *Mouth* oblique, round. *Outer lip* sharp but strong, porcellanous on the edge, brilliantly nacreous within; it descends very slightly. *Pillar-lip* thick, white, bent nearly to the point of the pillar over the umbilicus. It would be reverted but for the great thickness of the spiral pad, which comes twining up behind it out of the umbilicus, and out of which, at the point of the pillar, it forms a flat, triangular, tooth-like expansion. *Umbilicus* a minute spiral hole, which twists in between the overlying pillar-lip and the umbilical pad; the edge is corrugated with the old lines of the lip. H. 0·33 in. B. 0·4, least 0·3. Penultimate whorl, 0·1. Mouth, height 0·2, breadth 0·17.

This species somewhat resembles in form *Trochus tumidus*, Mont.; but, apart from differences of texture, colour, and sculpture, it is much less angulated and less broad on the base than that, and the upper whorls are more tumid and more immersed. *Trochus* (*Margarita*) *grœnlandicus*, Chemn., it also resembles in form and size; but apart from all differences of colour and sculpture, it is, than that, less conical, more scalar, the suture is much more impressed, and the whorls are more immersed. From *Trochus* (*Margarita*) *rhina*, Wats., it differs in the whorls being much more tumid and the general form less conical. From *Trochus* (*Margarita*) *pompholugotus*, Wats., it differs in the last whorl being far less tumid and out of proportion to those which precede. In contrast with *Trochus* (*Margarita*) *dnopherus*, Wats., the pad on the pillar-lip is here rather on the outside, with the lip flattened out upon it, while in that species the thickening is on the inside, filling up the lip. There is a general resemblance to *Trochus marginulatus*, Phil., but the whole sculpture is quite different; especially on the base that species has a sharp umbilical carina, and a wide funnel-shaped though shallow umbilicus. Taken in general, it most of all resembles *Trochus* (*Margarita*) *varicosus*, Migh. (= *Trochus polaris*, Daniels). Compared to that this species is stronger in the shell, and much more distinctly sculptured. That other is higher in the spire, narrower, with a higher and more tumid body whorl; the whole sculpture, though quite of the same type, is feebler; the base is more flatly conical, more radiatingly striate with a large funnel-shaped umbilicus which has a double cord round its edge; the embryonic apex is much larger and coarser, and is altogether more prominent, and consists of nearly one whorl and three-quarters, and the whole shell is in every way larger, with $5\frac{3}{4}$ whorls against 6 here.

54. *Trochus* (*Margarita*) *dnopherus*,[1] Watson (Pl. V. fig. 3).

Trochus (*Margarita*) *dnopherus*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 711.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 49′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Depressedly conical, rather strong, semi-transparent, of a dark pearly iridescence. *Sculpture:* There are spiral ridges, strong, five above the base; the first is close to the suture, and is exquisitely beaded from the middle of the second whorl; the beads are about thirty-five on the last, twenty-two on the penultimate whorl. The second ridge is remote from the first, and forms a shoulder to the whorls. The third, fourth, and fifth occupy the periphery, which is carinated by the fourth till close up to the mouth, when the fifth forms the carina. Four fine threads, of which the first is partially beaded, lie in the flat between the first and second ridges; two between the second and third; one between the third and fourth. Below the fifth ridge is a flat furrow narrower than the rest; below the furrow is a sixth ridge, slighter than the others; and then the base is closely covered with eleven spiral threads, which tend to become stronger and wider apart near the umbilicus. The first three ridges alone appear on the upper whorls. Longitudinally the whole surface is sharply scored by the lines of growth. *Colour* a ruddy brownish white, shot with a purple and green iridescence. *Spire* depressedly scalar. *Apex* bluntly mammillated by the somewhat shapeless, round, largish, glassy, ruddy, embryonic whorl. *Whorls* 4½, of rather rapid increase. *Suture* somewhat faint. *Mouth* oblique, roundish, being slightly peaked above and a little angulated on the pillar. *Outer lip* sharp but not thin, brilliantly iridescent within. *Inner lip* very much thickened by a pearly pad, which is very thick below where it envelops what might otherwise have been a tooth on the point of the pillar. The pad is thinner in the middle of the pillar, and thickens again at the junction with the body-whorl, on which it thins out quickly. The lip here is very slightly reflected on the umbilicus. *Umbilicus* very small and contracted, not so much by the reflection of the inner lip as by the pillar being bent round across it. *Operculum* very thin, yellow, horny, with about eleven very faintly defined turns. H. 0·28 in. B. 0·37, least 0·26. Penultimate whorl, 0·08. Mouth, height 0·2, breadth 0·2.

This species has a close general resemblance to *Margarita obscura*, Couth., but that is smaller, of slower increase, has an open umbilicus, is very dull in colour, and has much fewer spirals, besides which the whole minute system of spirals is different; the tubercled spiral, in particular, is the second, not the first, as here, and is not close to the suture. Than *Margarita poculosa*, Gould, which it resembles in its style of spirals, this is more discoidal, and is especially more tabulated below the suture; the angulation here is on the upper, not on the lower part of the whorls, and in that the infra-sutural thread is not beaded.

[1] διοφερός, dusky.

55. *Trochus (Margarita) streptophorus*,[1] n. sp. (Pl. XVII. fig. 4).

Station 214. February 10, 1875. Lat. 4° 33′ N. Long. 127° 6′ E. South-east of Philippines. 500 fathoms. Blue mud. Bottom temperature 41°·8.

Shell.—Ivory white, thin, conical, rounded at the periphery, umbilicated, sculptured, and rough on the upper whorls. *Sculpture:* the upper whorls are dull, rough, and reticulated, being crossed by oblique close-set riblets, scored by 7 or 8 fine round threads; the riblets gradually degenerate into puckerings, which die out in the course of the penultimate whorl; a necklace of little tubercles near the top of the puckerings becomes on this whorl double or treble, the tubercles being at the same time horizontally elongated; in this whorl too a very obtuse feeble tubercled carination appears in the middle of the whorls; both this keel and the subsutural necklace die out toward the mouth; the edge of the umbilicus is angularly keeled; outside of the keel is a strongish, but depressed thread; besides this stronger sculpture the whole surface is scored with very fine lines of growth and still more microscopic spiral scratches. *Colour* white, dead above, and with the gloss and beauty of ivory below, where a faint pearly nacre gleams through. *Spire* somewhat raised, scalar. *Apex* small, mammillated, but prominent. *Whorls* 6½, high and convex, more or less angulated above the periphery, of regular but rapid increase; the last large, with a round but slightly flattened base, and with a large marginated funnel-shaped umbilicus, within which the lines of growth are very strong. *Suture* strong, marginated. *Mouth* largish, round. *Outer lip* thin, bevelled off from the inside to a sharp edge, nacreous within. *Inner lip* strong, concave, patulous, thickened and angulated at point of the pillar where the umbilical keel joins it. *Umbilicus* funnel-shaped, pervious; a deeply marked suture coils up within it. H. 0·46 in. B. 0·46. Penultimate whorl, height 0·14. Mouth, height 0·25, breadth 0·23.

This is a singularly beautiful shell. It is connected in a general way with the group to which *Trochus (Oxystele) euspira*, Dall. (Proc. Zool. Soc. Lond., 1883, p. 98, pl. xx. fig. 6), belongs. In that species the umbilicus is large when the shell is young, and fills up entirely when the shell is full grown.

56. *Trochus (Margarita?) scintillans*, Watson (Pl. V. fig. 2).

Trochus (Margarita?) scintillans, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 712.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 56. May 29, 1873. Lat. 32° 8′ 45″ N., long. 64° 59′ 35″ W. Bermuda. 1075 fathoms. Coral mud.

[1] στρεπτοφόρος, wearing a necklace.

Shell.—Small, thin, white, very depressedly conoidal, angulated, tumid on the base, umbilicated; mouth semioval. *Sculpture:* It is perfectly smooth but for some curved puckerings which radiate from the umbilicus, but very soon die out; above the middle the body-whorl is roundly angulated. *Colour* pure white, with a transparent calcareous layer over brilliant fiery pearly nacre. *Spire* very depressedly conical. *Apex* bluntly rounded, with a minute, hyaline, depressed embryonic tip. *Whorls* 4½, barely convex. *Suture* slightly impressed. *Mouth* semioval. *Outer lip* thin, barely angulated at the periphery. *Pillar-lip* straight, patulous, right-angled at its junction with the base. *Umbilicus* small. H. 0·14 in. B. 0·2, least 0·16. Penultimate whorl, 0·025. Mouth, height 0·09, breadth 0·11.

The specimen from which I have described this is neither full grown nor perfect, but the species is a very well-marked one. It is much more depressed and has the whorls less rounded than *Trochus* (*Margarita*) *cuspira*, Dall. Than *Trochus helicinus*, Fabr., it is much more depressed, much more brilliantly nacreous, and the surface is much more polished, and the radiating puckers are much stronger.

I have put a query to *Margarita* as the group to which this should be attached, because it has not a rounded mouth; but there is no other group of *Trochus* to which it can so well be attached, and none of the characters by which *Margarita* is defined are very constant.

57. *Trochus* (*Margarita*) *cancellatus*, Jeffreys.

Trochus (*Margarita*) *cancellatus*, J. Gwyn Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1883, p. 96, No. 4, pl. xx., fig. 4.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—North Atlantic. Station 16 of "Porcupine" Expedition, 1870.

This shell can hardly be admitted into the genus *Trochus*, except, as it were, "under stress of weather." The inner lip is distinctly continuous across the body, and the shell is porcellanous with a lustrous surface within the mouth, but is not, I think, nacreous. The real difficulty, however, is what else to call it. It recalls *Ostodes strigatus*, Gould.

58. *Trochus* (*Chrysostoma*) *paradoxus* (Born).

Helix paradoxa, Born, Test. Mus. Cæs. Vindob., p. 394, pl. xiii. figs. 16, 17.
Chrysostomus nicobaricus, Chemnitz, Conch. Cab., vol. v. p. 216, pl. 182, figs. 1822–25.
Turbo nicobaricus, Lamarck, Anim. s. vert., vol. vii. p. 48, and (ed. Desh.) vol. ix. p. 214, sp. 26.
" " Deshayes, Encyclop. méthod., vol. iii. p. 1098, No. 18
" " Dillwyn, Cat., vol. ix. p. 816, sp. 3.
" " Philippi, Conch. Cab. (ed. Küster), p. 34, sp. 28, pl. viii. figs. 14–17.
" " Kiener, Iconog. (corrected to *Trochus* by Fischer, p. 68), No. 45, pl. xxxvi. fig. 5.

Turbo nicobaricus, Wood, Ind. Test. (ed. Hanley), p. 149, pl. xxx. fig. 3 (*Littorina*).
„ „ Reeve, Conch. Icon., vol. iv. pl. xi. 48.
„ „ Fischer, List of Souverbie's New Caled. Shells, Journ. de conch. vol. viii. p. 202.
„ „ Fischer, Journ. de conch., vol. ix. p. 265.
Chrysostoma paradoxum, Adams, Genera, vol. i. p. 410, pl. xlvi. fig. 4.
„ *nicobaricum*, Crosse, Journ. de conch., vol. xiv. p. 116, pl. v. fig. 8 (the operculum).
Trochus (*Chrysostoma*) *nicobaricus*, Von Martens, Moll. Mauritius, &c., p. 297.

February 1, 1875. Samboangan, Philippines. 10 fathoms.

Wild Island, Admiralty Islands, north of Papua.

Habitat.—Mauritius (? Von Martens), Nicobar Islands (Chemnitz), Philippines (Cuming), New Caledonia (Souverbie).

The change from Chemnitz's well-known name is an unfortunate necessity. Born's description of the species is unmistakable, his right of priority inalienable, and Chemnitz's avowed change indefensible. In these circumstances the return to Born's name must be made some day; the sooner, therefore, it is made the better, and Adams has already set the example.

2. *Gaza*,[1] Watson, 1878.

Gaza, Watson, Prelim. Report, pt. 3, Journ. Linn. Soc. Lond., vol. xiv. p. 601.

Shell trochiform, nacreous both on the surface and throughout, delicately sculptured, with a reversed lip thickened internally by a nacreous callus; the pillar twisted, direct, in front angulated and pointed, behind entirely parted from the lip, and in the umbilical region spread out in a nacreous pad. The operculum is round, membranaceous, thin, and many-whorled.

Whether this and all the other features enumerated above will prove constant is a question for time to determine. At present a new genus is inevitable; for this shell, though plainly one of the Trochidæ and of the Trochocochlea group, cannot possibly be put into the genus *Trochus* in any of its divisions. In form it resembles most of all one of the West Indian operculated pulmonates, such as *Alcadia*, while its exquisite nacre, its cancellated sculpture, its reflexed thickened lip, its nacreous umbilical pad, and its perpendicular externally mucronated pillar, separate it in the strongest way. Under these circumstances I have yielded to the strongly expressed opinions of judges so trustworthy as Dr Kobelt of Frankfort and Mr Dall of Washington, and take this as the type of a new genus.

Gaza dædala,[2] Watson (Pl. VII. fig. 12).

Gaza dædala, Watson, Prelim. Report, pt. 3, Journ. Linn. Soc. Lond., vol. xiv. p. 602.

Station 174c. August 3, 1874. Lat. 19° 7′ 50″ S., long. 178° 19′ 35″ E. Kandavu, Fiji. 610 fathoms. Coral mud.

[1] γάζα, treasure. [2] δαίδαλος, variegated.

Shell.—Depressedly globose, with a convexly conical spire, thin, translucent, horny, nacreous in its whole texture, and iridescent on the surface, with a slightly reverted and narrowly thickened lip, a thin-edged twisted pillar, the point of which runs out into a bluntly mucronated angle. *Sculpture:* Longitudinals—the whole surface is covered with strong, puckered, oblique lines of growth, which are sharp-edged but flattened, rather regular, with many minuter ones in the intervals. The longitudinals are cross-hatched with spirals, which are stronger and more regular, but not perfectly uniform, consisting of square threads and furrows of equal breadth, and both scored by the longitudinals; on the earlier whorls these spirals disappear before the longitudinals do; and on the base they become on the outside feebler, closer, and finer, in the middle broader and flatter, and stronger again toward the centre of the shell. *Colour*, delicate yellowish, with a horny translucency and exquisite iridescence, which under the lens appears brilliant. *Spire* high and slightly scalar. *Apex* very small, flatly rounded, the embryonic $1\frac{1}{4}$ whorl very slightly projecting. *Whorls* 7, of gradual increase, well rounded, the last slightly angulated below, and on the base flattened, but rather less so towards the mouth, where there is a slight contraction and downward turning of the whole whorl, without, however, any descending of the lip at its junction with the body. *Suture* very distinct, but not impressed. *Mouth* rather large, very oblique, semioval. *Outer lip* reflected and thickened internally by a strong but narrow, equal, rounded, white pearly callus, which almost disappears just at the upper corner, and which has a very slight furrow round its margin; it does not descend at all. *Inner lip*—from the corner of the outer lip a very thin layer of nacre spreads out a little way across the body, but then ceases entirely. The pillar is spread out at its base as a confined, flattened, unevenly inclined, semicircular, iridescent umbilical pad, from the left corner of which the pillar proper projects, with a narrow but rounded edge, twisted, straight, bending to the left, and advances into a sharply angulated, and, as seen from behind, even mucronated junction with the basal mouth-edge, to which the umbilical pad curving round the back of the pillar also attains. The inside is scored with the external sculpture, and is brilliantly iridescent. The umbilical pad is defined by a narrow furrow, and in front by a slightly tumid ridge, which is the least nacreous part of the whole shell. *Operculum* is membranaceous, horny, yellowish, with about six to seven turns, each strongly defined by a narrow line of thickening, and sharply scored with minute oblique radiating lines. H. 0·65 in. B. 0·87, least 0·7. Penultimate whorl 0·199. Mouth, height 0·43, breadth 0·41.

Unfortunately, though the operculum is preserved, nothing but traces of the animal remain within the shell.

3. *Bembix*,[1] Watson, 1878.

Bembix, Watson, Prelim. Report, pt. 3, Journ. Linn. Soc. Lond., vol. xiv. p. 603.

Shell.—Conical, high, carinated, tumid on the base, umbilicated, thin, nacreous, covered with a thin membranaceous epidermis. *Operculum* membranaceous and multispiral.

A remarkable feature of this genus is its being covered with a thin, extremely persistent, smooth, fibrous epidermis, like that of some of the *Helices*. This epidermis swells up and becomes pustulated in water. In form the shell recalls some of the *Cantharidus* group, but is thinner and on the base more tumid; the axis is perforated, and the pillar is thin, reverted, and merely angulated in front. [A larger specimen has at the last moment come into my hands. It is that referred to by Dr Hoek (Cirripedia, Zool. Chall. Exp., pt. xxv. p. 68), and very roughly outlined on pl. iii. figs. 9, 10. From this specimen the operculum has been described. The basal threads of the shell are somewhat more numerous than I have described them, and the umbilicus is covered, a mere chink alone remaining.] As to the name of the genus, I think the only objection that can be taken to it is that Philippi proposed the name *Bembicium* for one of the genera of Litorinidæ, but afterwards himself withdrew it for the prior name of *Riscila*, Gray.

Bembix æola,[2] Watson (Pl. VII. fig. 13).

Bembix æola, Watson, Prelim. Report, pt. 3, Journ. Linn. Soc. Lond., vol. xiv. p. 603.

Station 232. May 12, 1875. Lat. 35° 11′ N., long. 139° 28′ E. Inosima, Japan. 345 fathoms. Green mud.

Station 235. June 4, 1875. Lat. 34° 7′ N., long. 138° E. Off Japan. 565 fathoms. Green mud. Bottom temperature 38°1.

Shell.—High, concavely conical, carinated, sculptured on the upper whorls, smooth or wrinkled below, thin, with a tumid lirated base, narrowly umbilicated, with a smooth epidermis, thin, but especially so on the base. More or less nacreous all over under a thin porcellanous upper layer. *Sculpture:* The first three whorls (after the embryonic apex) are reticulated by three sharp remote spirals, and rather stronger, slightly oblique longitudinals, which rise at their intersection into small sharp pyramidal tubercles; the interstices are a little broader than high. This system gradually dies out and leaves the surface smooth, only the row of infra-sutural tubercles survives in an enlarged but depressed form, and springing from these some sinuous, oblique, and slightly irregular longitudinal puckerings appear on the last whorl, which is nearly bisected by the sharpish, slightly expressed, finely tubercled carina. This bisection of the last whorl arises from the great prolongation and tumidity of the base, on which, below the carina, are five narrow, equally parted, spiral threads, and two intra-umbilical ones, which are more continuous. Besides this larger system of sculpture, the whole surface is covered with minute, oblique, irregular, and interrupted puckerings of the epidermis. *Colour* a brownish yellow, but below the

[1] βέμβιξ, a top. [2] ἀοίλος, variegated.

epidermis there is a thin pure white porcellanous layer, through which and the epidermis the sheen of the nacreous layer gleams. The base is whiter, the epidermis there being very thin. Inside the mouth is an exquisite roseate nacre. *Spire* high, with a slightly concave contour, the lines of which are hardly swollen out by the slight tumidity of the last whorl. *Apex* eroded, but evidently small. *Whorls* 7 or 8, of regular increase, quite flat on the side slopes, except the last, which is very slightly constricted below the suture, a very little tumid on the upper slope, sharply carinated but not much angulated at the suture, and very tumid on the base. *Suture* linear, strongly defined on the upper whorls by the square furrow lying between the lines of tubercules which marginate the suture above and below. On the last whorl it becomes slightly pouting, from the projection of the carina and the slight infra-sutural constriction. *Mouth* nearly square, very little oblique in the line of its advance, but standing out a little obliquely to the axis of the shell. *Outer lip* thin, not descending. *Pillar-lip* thin, spread out broadly at its base over the umbilicus, which it largely conceals, with a deep narrow furrow behind it. Curving over to the right, it advances, thin and pointed, to its angular junction with the basal lip. *Umbilicus* defined by a spiral thread and with two other spirals within it. It is not small, but is concealed by the pillar-lip. H. 0·82 in. B. 0·63, least 0·53. Penultimate whorl, 0·19. Mouth 0·4; breadth 0·38.

Trochus (*Cantharidus*) *iris*, Humph., while totally unlike in most respects, slightly approaches this in form. It is evidently not remote from *Trochus argenteonitens*, Lischke (Japan. Meeres Conch. vol. iii. p. 67), a species I know only from the figure and description. The whole sculpture, however, seems distinct though similar.

4. *Basilissa*,[1] Watson, 1878.

Basilissa, Watson, Prelim. Report, pt. 3, Journ. Linn. Soc. Lond., vol. xiv. p. 593.

Shell conical, carinated, umbilicated, nacreous: the last whorl is sinuated above: the pillar is straight and in its direction but little oblique, thin, hollowed out above, in front hardly toothed, but at the base strongly angulated: the mouth is rhomboidal: the outer and the inner lip do not approach one another, nor are united by any palatal callus.

The special feature of this genus is the sinus in the outer lip near its insertion. In the presence of such a sinus it resembles *Seguenzia*, Jeffr., but differs from that genus in this, that *Basilissa* has a wide, open, shallow, not a deep-cleft sinus; is brilliantly nacreous, and lacks the sharp tooth on the pillar, with the strongly marked sinus above and below it. It also wants the carinal sinus which all the species of *Seguenzia* I have examined present; and the basal sinus can scarcely be said to exist, though on the base the lines of growth change their direction markedly below the carina.

In form, in sculpture, and in its sinus this genus recalls *Platyschisma*, M'Coy, a Carboniferous fossil; but that belongs to the Solariidæ, and is distinguishable at once by the absence of the

[1] βασίλισσα, queen.

nacreous shell-structure, by its rounded mouth, and by its short pillar. It may be interesting to observe that apparently *Trochus collaris*, Sow., and *Trochus lævis*, Sow., both tertiary fossils from Patagonia, described in the Appendix to Darwin's Geol. Observ. on South America, p. 256, and that certainly *Solarium reticulatum*, Phil. (see Enum. vol. ii. p. 149), a species which the "Porcupine" dredged in the North Atlantic at Stations 9, 116, 17, 17A; and probably a good many more species already described, belong to this genus.

The *Solarium reticulatum*, Phil., is intermediate between *Basilissa costulata*, Wats., and *Basilissa oxytropis*, Wats.

A. Adams's subgenus *Forskällia* (*Gibbula*) is quite distinct. In it "the last whorl has a conspicuous *groove* at the periphery," according to his definition; but that is a spiral furrow formed by an impressed fold of the shell-wall in each successive whorl—not a sinus in the edge of the mouth resembling that in the Pleurotomidæ, and differing from that of *Seguenzia* in the same way as the sinus of *Defrancia* differs from that of a typical *Pleurotoma*.

Species.

1. *Basilissa lampra*, Wats.
2. *Basilissa simplex*, Wats.
3. *Basilissa munda*, Wats.
4. *Basilissa alta*, Wats.
5. *Basilissa superba*, Wats.
6. *Basilissa costulata*, Wats.
7. *Basilissa oxytropis*, Wats.

1. *Basilissa lampra*,[1] Watson (Pl. VII. fig. 5).

Basilissa lampra, Watson, Prelim. Report, pt. 3, Journ. Linn. Soc. Lond., vol. xiv. p. 593.

Station 246. July 2, 1875. Lat. 36° 10′ N., long. 178° E. Mid-Pacific, E. of Japan. 2050 fathoms. Globigerina ooze.

Shell.—Thin, white, opalescent, smooth, faintly reticulated, with a high concave spire, sharp apex, acute carina, angulated umbilicus, and rhomboidal mouth. *Sculpture:* Smooth, glossy, iridescent, with ten to twenty faint spiral threads on the upper side of the body-whorl; the last of these which joins the lip is much stronger than the others; a little remote and below is a thread forming the keel, below which, and nearer, are two other strong threads; round the umbilicus are also two strong threads; the intermediate space on the base is marked with eight to ten impressed spiral striæ. The interstices of the spirals are crossed by longitudinals, which are regular, fine, hair-like, but distinct and well parted; their curve on the surface below the suture shows the old sinus. On the base they are radiating and are crowded and irregular, except round the umbilicus, where in the first two or three striæ they are very sharp and distinct. On the upper whorls both the spirals and longitudinals are finer, but sharper, than they are on the last. *Colour* a greyish, horny, translucent, opalescent white. *Spire* raised, with a concave outline. *Apex*, which consists of the single minute embryonic whorl, is slightly exserted and sharp; it is quite smooth, but the spirals and longitudinals begin sharply immediately below it. *Whorls* $6\frac{1}{2}$; the earlier ones are of slow and regular increase, depressed, quite flat on their side lines;

[1] λαμπρός, shining.

the last widens rapidly, is slightly rounded above, and still more slightly concave on the base, with an acute, but still rounded keel. *Suture* impressed on the body-whorl, but on the upper whorls sharply, though slightly, marginated below. *Mouth* a little oblique, rhomboidal, the basal and palatal lines being nearly parallel, while the outer and inner lips diverge downwards. *Outer lip* thin, not patulous, not descending, advancing at its insertion, and then retreating so as to form a shallow, broad, open sinus a little below the suture, acutely but roundedly angulate at the periphery, nearly flat on the base, with a very slight nick at the point of the pillar, where it joins the inner lip at a slightly obtuse angle. The *pillar-lip* is straight. It is a very little thickened, and is slightly porcellanous. It advances a little on the edge of the umbilicus; below this it is hollowed out by a receding curve, but advances again into a slight rounded projection just above its junction with the outer lip. In its whole direction it inclines slightly to the left. *Umbilicus* oblique-edged, funnel-shaped, being wide in the mouth and deep, with straight converging sides. It is slightly marked with lines of growth and a few faint spirals; while all the rest of the shell without and within is brightly opalescent, it is scarcely so at all. Height 0·3 in. B. 0·48, least 0·35. Penultimate whorl, 0·08. Mouth, height 0·2, breadth 0·23.

The specimen from which this species is described is full grown, and the animal is still within the shell, but the operculum is absent.

The species has a slight general resemblance to *Trochus* (*Solariella*) *aurconitens*, A. Ad., but is utterly different, not only in its angulation, but in its sculpture. In form it slightly recalls *Zonites cellarius*, Müll.

2. *Basilissa simplex*, Watson (Pl. VII. fig. 6).

Basilissa simplex, Watson, Prelim. Report, pt. 3, Journ. Linn. Soc. Lond., vol. xiv. p. 595.

Station 323. February 28, 1876. Lat. 35° 39′ S., long. 50° 47′ W. Off mouth of La Plata. 1900 fathoms. Blue mud.

Shell.—A rather narrow flat-based cone, sharply angulated, small, thin, delicate, smooth, glassy, nacreous under a thin white calcareous surface. *Sculpture:* There are longitudinals, which are faint, hair-like, and sinuated, showing the old lines of growth. Of spirals, faint, rounded, and irregular, the whole surface has traces. At the bottom of each whorl is a flat puckered band, about 0·01 inch broad, whose upper edge projects sharply, especially on the upper whorls, and whose lower edge is a slight narrow flange, which forms a sharp carina at the periphery. This band forms the upper border of the suture, which is further marginated below by two not continuous rounded threads occupying the top edge of each whorl. The base is covered by about fourteen rounded ridges and furrows, which are rather stronger toward the centre, the last one, forming the edge

of the umbilicus, being specially so. *Colour:* the surface is a dead slightly creamy white, formed by a thin calcareous layer through which the underlying nacre shines. *Spire* high and conical. *Apex* broken. *Whorls* 8 (reckoning the first two as broken), of slow and regular increase till the last, which enlarges rapidly; perfectly flat, with an upper and lower border, sharply angulated and carinated at the periphery, slightly convex but still very flat on the base, with a blunted angulated and carinated umbilical edge. *Suture* linear, almost invisible, marginated above and below. *Mouth* perpendicular, rhomboidal, with the body-pillar and basal edges nearly equal, and the pillar and outer lip nearly parallel. *Outer lip* sharp and thin, not patulous, not descending, advancing at its junction with the body-whorl, then retreating so as to form the broad open sinus, acute-angled at the periphery, slightly arched across the base, nicked close to the point of the pillar. *Pillar-lip* arched, strengthened by a thin pad; reverted on the umbilicus so as to leave a slight groove behind it, it has a slight tooth in front. From the body-whorl it bends very much over to the left, so as largely to cover the umbilicus, and then it curves over to the right to join the outer lip on the base at an obtuse angle. *Umbilicus* small, oblique-edged, funnel-shaped, nearly covered by the pillar-lip, contracted within, scored with hair-like lines of growth. Height 0·255 in. B. 0·25, least breadth 0·2. Penultimate whorl, 0·075. Mouth, height 0·12, breadth 0·11.

This is a narrower shell than *Basilissa alta*, Wats., less ornamented and with a smaller umbilicus. Than *Basilissa munda*, Wats., this is a narrower shell, the flexuous longitudinals are stronger, the supra-sutural bands are stronger, and in that species the infra-sutural band is wanting.

3. *Basilissa munda*, Watson (Pl. VII. fig. 7).

Basilissa munda, Watson, Prelim. Report, pt. 3, Journ. Linn. Soc. Lond., vol. xiv. p. 596.

Station 85. July 19, 1873. Lat. 28° 42′ N., long. 18° 6′ W. Off Palma, Canaries. 1125 fathoms. Volcanic mud.

Shell.—Broadly conical, flat on the base, sharply angulated, small, thin, delicate, smooth, glossy, nacreous under a thin white calcareous surface. *Sculpture:* There are longitudinals, which are very faint but still sharp, sinuated, showing the old lines of growth. Of spirals there are over the whole surface very faint traces. At the bottom of each whorl, about 0·01 inch above the suture, is a sharp narrow thread, which on the last whorl is bordered below by a second, rather higher and sharper, which forms the carina, and which on the spire is buried by the overlap of the succeeding whorl. On the base there are about eleven fine spirals, within which is a strong furrow, and a projecting, crenulated, or rope-like thread forming the edge of the umbilicus. *Colour* opalescent, from the underlying nacre shining through the polished, thin, translucent calcareous layer of the surface. *Spire* high and conical. *Apex* flattened, with the minute smooth embryonic

1½ whorl slightly projecting. *Whorls* 6, of regular and slow increase (but the specimen is not full grown); in profile perfectly flat, the slope being scarcely broken by the suprasutural thread. *Suture* linear, almost invisible. *Mouth* perpendicular, irregularly rectangular, broader than high. *Outer lip* sharp and thin, with a slight open sinus; sharply angled at the periphery, slightly arched across the base, apparently nicked at the point of the pillar. *Pillar-lip* arched, strengthened by a thin pad, reverted on the umbilicus so as to leave a groove behind it, with a slight tooth in front. From the body it bends very much over to the left, so as largely to cover the umbilicus; it then advances straight and is toothed in front. *Umbilicus* small, oblique-edged, with a crenulated margin. Height 0·13 in. Breadth 0·14, least 0·12. Penultimate whorl, 0·03. Mouth, height 0·06, breadth 0·05.

Than *Basilissa simplex*, Wats., this is a broader, smoother, less banded shell. Than *Basilissa alta*, Wats., it is lower, less ornamented, with a much smaller umbilicus.

4. *Basilissa alta*, Watson (Pl. VII. fig. 8).

Basilissa alta, Watson, Prelim. Report, pt. 3, Journ. Linn. Soc. Lond., 1878, vol. xiv. p. 597, sp. 4.
„ „ Dall, "Blake" Moll., Bull. Mus. Comp. Zool. Camb., U.S.A., 1881, vol. ix. p. 48.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Var. *Oxytoma*, Watson (Pl. VII. fig. 8a).

Station 120. September 9, 1873. Lat. 8° 37′ S., long. 34° 28′ W. Off Pernambuco. 675 fathoms. Red mud.

Habitat.—Gulf of Mexico.

Shell.—An equilateral cone, flat-based, sharply angulated, small, thin, delicately sculptured, nacreous under a thin, white, calcareous surface. *Sculpture:* There are longitudinals about 45, hair-like, strongly sinuated, flexuous, for they advance markedly at the periphery, where they are each ornamented by an elongated curved tubercle, and on the base they again retreat so as to form a sinus. On the earlier whorls these longitudinals are much more distinct than on the later, and each starts from a little bead, which lies close to the suture, but these beads are very feeble on the last whorl. In the intervals of the longitudinals and parallel to them are very faint lines of growth. Of spirals there are above the carina two stronger than the rest, with a sharp intermediate furrow; above these are several hair-like lines, which become feebler towards the middle of the whorl and

strong again above, the upper whorls presenting one in particular, which connects the row of infra-sutural beads. On the base below the carina are four narrow and sharp spirals, followed by about eight, which are broader and flattened, and within these is one stronger than the rest, with about sixteen rounded beads, which crenulate the edge of the umbilicus. The furrows between these basal spirals are cut into little oblong pits by the longitudinals. *Colour* a dead creamy white, with the underlying nacre gleaming through. *Spire* high and conical. *Apex* flattened, with the minute, smooth, $1\frac{1}{4}$ embryonic whorl somewhat tumidly projecting. *Whorls* $8\frac{1}{2}$, of slow and regular increase. In the earlier whorls there is a slight tumidity below the suture, a slight contraction in the middle, and a slight swelling round the base of each whorl. This last feature is feebly persistent in the later whorls, but otherwise these are flat in profile. There is a sharp carinated angle, and the base is almost flat, with an angular tubercled umbilical edge. *Suture* linear, almost invisible. *Mouth* perpendicular, somewhat rectangular, and broader than high. *Outer lip* sharp and thin, not patulous, not descending, with a rather deep but broad and open sinus at the suture, forming a slightly acute angle at the periphery, where it advances very markedly, retreating immediately to form a sinus on the base, where it is barely arched. *Pillar-lip*, which is somewhat thickened, advances very little at its junction with the body, then retreats slightly so as to form a small sinus, bending at the same time a very little over the umbilicus. It has a sort of double point with a slight nick between them. It is very slightly reverted, and the umbilical groove behind it is very small. *Umbilicus* small, funnel-shaped, oblique-edged, crenate on the margin, and strongly scored within, and with an oblique spiral formed by the old points of the false pillar-end. Height 0·25 in. Breadth 0·24, least 0·22. Penultimate whorl, 0·08. Mouth, height 0·09, breadth 0·1.

The variety *Oxytoma*, Wats., from Pernambuco, is characterised by the remarkable distinctness of its sculpture, whence its name. This species is a broader and much more ornamented form than *Basilissa simplex* or *Basilissa munda*.

5. *Basilissa superba*, Watson (Pl. VII. fig. 10).

Basilissa superba, Watson, Prelim. Report., pt. 3, Journ. Linn. Soc. Lond., vol. xiv. p. 598.

Station 184. August 29, 1874. Lat. 12° 8′ S., long. 145° 10′ E. E. of Cape York, Australia. 1400 fathoms. Globigerina ooze.

Shell.—High, concavely conical, flat-based, sharply angulated, thin, finely reticulated, cream-coloured. Nacre very faint. *Sculpture:* Spirals—there are about twenty delicate threads, very nearly but not quite regular in thickness or distance, on the upper part of the last whorl; they slowly decrease in number on the previous whorls. The two (or three) which form the carina are thrown out a little on a projecting whitish fillet, which encircles

the base of the whorls. This whitish fillet extends to the base, where it forms a narrow obliquely-corrugated edging. On the base there are about thirty spirals, more crowded, flattened, and irregular than above, and the edge of the umbilicus is defined by another whitish fillet, ornamented with about thirty oblong beads. One or two smaller and more faintly beaded threads lie within the edge of the umbilicus. Longitudinals—there are of these on the last whorl about 120, flexuous, marking the lines of growth, rather stronger, more regular, and more distant than the spirals, which run over the top of them and form little white nodes at the crossings. The intersections of these two systems cut the whole surface into rhombic reticulations, whose breadth is about 0·011 and their height 0·006. The longitudinal threads themselves are about 0·005 and the spirals about 0·003 broad. On the base the longitudinals are flattened and spread out into undulations. *Colour* creamy, on a dull polished surface, with a very faint nacreous gleam, which is pearly within the mouth; the apex is ruddy. *Spire* high and conical, with slightly concave slopes; apex broken. On the upper whorls the longitudinals are strong, while the spirals are obsolete, except the carinal fillet, which projects bluntly above the suture. *Whorls* about 14, of very regular increase, very slightly convex, sharply acute-angled at the carina; on the base, flat at the outer edge and barely convex in the middle, with a slight dip in toward the edge of the umbilicus, which is strongly defined. *Suture* linear, defined by the white carinal fillet, and also on the lower whorls by being very slightly impressed. *Mouth* perpendicular, rhomboidal, the basal and palatal lines being parallel, the other two are somewhat diverging and curved, broader than high. *Outer lip* sharp and thin, not patulous, not descending, with a shallow open sinus below the suture, then, about the middle of the whorl, it advances with a rounded sweep, retreating sharply across the carina to form the open rounded basal sinus towards the outer edge of the base. *Pillar-lip* sharp and thin; it rises from the body a good way within the edge of the umbilicus. It retreats so as to form a sinus, and there it bends over a little on the umbilicus, and it forms a sharp angle projecting into a tooth at the extreme point of the pillar. *Umbilicus* strong, deep, abrupt, there being on the base only a very slight dip in towards it, and it is defined by the white-beaded fillet. Within, besides the two spiral lines, there are slight longitudinal striations, and the inner edge of the whorls twines like a staircase round it, but concealed by the over-curve of the pillar-lip. H. 0·75 in. B. 0·65, least 0·6. Penultimate whorl, 0·16. Mouth, height 0·2, breadth 0·28.

The form of this shell connects it with *Basilissa alta*, *Basilissa simplex*, and *Basilissa munda*, and it distinctly has the sinuses of the genus: the layer of nacre is very faint; there is, however, a gleam of it through the surface-layer, and within the mouth, in a favourable light and protected from light coming through the shell, there is a distinct pearly lustre.

It has some resemblance to *Eutrochus gemmatus*, Reeve, in form and in its gemmed umbilicus; and, though much higher and more conical, recalls the *Solaria* of the group *Torinia* (Gray), especially *Solarium trochoïdes*, Desh.

6. *Basilissa costulata*, Watson (Pl. VII. fig. 11).

Basilissa costulata, Watson, Prelim. Report, pt. 3, Journ. Linn. Soc. Lond., 1878, vol. xiv. p. 600.
" " Dall, "Blake" Moll., Bull. Mus. Comp. Zool., Camb., U.S.A., 1881, vol. ix. p. 48.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ W., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—Gulf of Mexico, 15 to 640 fathoms (Dall), Stations 7 (1868 or 1869), 16, 17, 17A (1870) of the "Porcupine" Expedition (Jeffr.)

Shell.—Small, depressedly conoidal, sharply angulated, flattish on the base, sharply and deeply umbilicated, a little porcellanous, flexuously ribbed. *Sculpture:* The whole surface is covered with longitudinal flexuous ribs, which are narrow, sharp, and uniform; each of these is about 0·002 in. broad, and they are parted by intervals, which at the suture are twice and at the periphery thrice as broad as the ribs. There are about forty of these on the last whorl. They are crossed by spirals, half the breadth of the ribs, running across the intercostal spaces and forming knobs on the ribs. Of these spirals there are about seventeen on the last whorl, much closer set and less uniform than the ribs; in particular the carinal spiral, which is very sharp, and the fourth and seventh above it, are stronger than the others; the last mentioned of these is especially so on the earliest whorls. On the base the longitudinals, though continued even into the umbilicus, become much less prominent and are no longer nodose; and the spirals, of which there are about fifteen, are closer set, broader and flatter, except the first three below the carina, which are sharp and narrow. The whole base is pit-marked from the spiral interstitial furrows being cut up by the longitudinals. *Colour* dead white (on the base a little glossy) on the thin porcellanous surface, through which the nacreous layer behind gleams. *Spire* raised, with a very slightly concave outline. *Apex*, which consists of the minute smooth embryonic whorl and a half, is itself a little flattened, but rises sharply above the sculptured surface of the succeeding whorls. *Whorls* 5½, of slow and regular increase till the last, which begins to enlarge rapidly; they are slightly rounded above, very sharply angulated at the keel, and flattened on the base, with a bluntly angulated umbilical edge. *Suture* distinct, slightly impressed. *Mouth* perpendicular, square. *Outer lip* sharp, thickened by a slight internal remote callus, not patulous, not descending, advancing at its junction with the body-whorl and then slightly retreating so as to form the very shallow open sinus; right-angled at the periphery, flat on the base, where it retreats so as to form two rounded sinuses, making with the pillar an angle that is scarcely obtuse. *Pillar-lip* is straight, a little thickened and reverted, so as to leave a slight groove behind it. It advances on the body-whorl, then retreats so as to form a feeble sinus, bending at the same time shortly but sharply to the right into the umbilicus and then advancing straight forward, but a little toward the left, to its junction with the outer lip at the base. *Umbilicus* funnel-shaped, open-

mouthed, oblique-edged, straight-sided, deep and contracted internally. Its edge is sharply defined by a spiral thread, and is obliquely scored by the longitudinal ribs; farther in its walls are marked by hair-like lines of growth and faint spirals. Height 0·12 in. Breadth 0·14; least 0·11. Penultimate whorl, 0·23. Mouth, height 0·063, breadth 0·061.

This species slightly resembles in sculpture the young of *Margarita striata*, Brod. (=*Trochus cinereus*, Couth., *nec* Da Costa), but in all details of form and ornamentation is very different. From *Trochus amabilis*, Jeffr., besides the generic features, it differs in the depressed spire, in the absence of the deep-cut suture, in the flatness of the base, and in all the features of minute sculpture. From *Basilissa reticulata* (*Solarium*), Phil., it differs in being much rounder on the base, blunter at the edge of the umbilicus and at the carina, and in being much less delicately sculptured.

7. *Basilissa oxytropis*,[1] Watson (Pl. VII. fig. 9).

Basilissa oxytropis, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 693.

Station 344. April 3, 1876. Lat. 7° 54′ 20″ S., long. 14° 28′ 20″ W. Ascension Island. 420 fathoms. Volcanic sand.

Shell.—Small, high, conical, scalar, with a sharp, expressed carina at the periphery and a second carina above, angulating the whorls. *Sculpture:* There are a few close-set slight spirals on the edge of the flat base; there are many not close-set, flexuous, longitudinal ribs above the periphery, but on the base merely lines of growth. These ribs in crossing the upper carina form small sharp-pointed tubercles, of which there is also a trace on the lower carina. The superior *sinus* lies just above the upper carina, the basal sinus toward the middle of the base: both are well marked. The *apex* is small and flat, the smooth embryonic 1¼ whorl hardly rising at all. The *whorls* are of slow increase. The *pillar* is perpendicular, with a strong rounded sinus, which corresponds to a swelling within the umbilicus. The *umbilicus* is not large, but deep, funnel-shaped, with a puckered sharp edge. In both specimens there are 5½ whorls to a height of 0·05 and a breadth of 0·055.

This species, which is not full grown, slightly resembles *Basilissa alta*, Wats., var. *oxytoma*, Wats., but is more depressed; the carina is sharper and is double, and the longitudinal ribs are very much stronger. Than *Basilissa costulata*, Wats., this species is smaller, higher, more conical, and it is scalar; the whorls are more carinated above, and the peripheral carina is much more projecting; the apex is minuter and sharper, though the embryonic whorl is less raised; the base is smooth but for the marginal spirals; the umbilicus is smaller. Compared to *Basilissa reticulata* (*Solarium*), Phil., it has a less expressed carina, and the whorls are not angulated in the middle.

[1] ὀξύς, sharp; τρόπις, a keel.

5. *Seguenzia*, Jeffreys, 1876.

Seguenzia, J. G. Jeffreys, Report on the Biology of the "Valorous" Cruise, Proc. Roy. Soc., No. 173, 1876, p. 200.

In all the species of this genus I have seen, besides the infra-sutural sinus resembling that of the Pleurotomacea, there are two others—one, which is rather sharp and slight, at the carina, and another, opener, on the base: between all of these the lines of growth curve out strongly towards the mouth. This might probably be accepted as a generic character. It is a feature very difficult to trace; but it certainly exists. In a perfect shell the mouth-edge would of course exhibit it; but all the specimens I have seen are more or less chipped.

The nacre of the shell is a feature that connects the genus with the Trochidæ. The nacreous layer is evidently not thick; and when the shell is young and perfectly fresh, it is altogether so translucent that the nacre hardly appears as more than a pearly lustre; and in all cases it has more of the beauty of the actual pearl than that of the mother-of-pearl shell, but the nacreous layer is unmistakably present. The exterior calcareous layer is thin and very highly translucent, but still not glassy. The operculum of *Seguenzia monocingulata*, Seg., of which only one specimen has been examined, is by no means characteristically Trochoid, but does not offer a very stable basis for connecting the genus with the *Solariidæ*. In that family, very distinctively, the operculum can hardly be considered a well-marked feature; and far too little is yet known about the genus *Seguenzia* to make its classification anywhere very satisfactory. This, however, I ought to add, is not the opinion of Professor Verrill, who has had quite recently the advantage of examining a second specimen of *Seguenzia monocingulata*, Seg., and who has already (see Second Catalogue of N. England Deep Sea Mollusca, p. 186) constituted a new family, "Seguenzidæ," having, he says, no affinity either with *Solarium* (a Ptenoglossa), near which Jeffries placed the group, nor with the Trochidæ (Rhipidoglossa), but belonging to the Tænioglossæ. He adds the following details, the confirmation of which will be interesting:—"Operculum thin, rounded-ovate or ear-shaped, with a sub-central nucleus and fine concentric lines. Jaws ovate, with tesselated surface and denticulated edge. Odontophore (in *Seguenzia*) minute *Tænioglossate*; the central tooth small, with one denticle; the inner laterals smaller, with curved unarmed tip; the two outer laterals slender, sharp, strongly curved."

Species.

1. *Seguenzia monocingulata*, Seg.
2. *Seguenzia ionica*, Wats.
3. *Seguenzia carinata*, Jeffr.
4. *Seguenzia trispinosa*, Wats.

1. *Seguenzia monocingulata*, Seguenza.

Seguenzia monocingulata, Seguenza, Studii stratig. sul. form. pliocenica dell' Italia merid., Boll. del Comitato Geologico, vol. vii. p. 188, May 1876.

„ *formosa*, Jeffreys, "Valorous" Expedition, Proc. Roy. Soc., No. 173, June 15, 1876, p. 200.

monocingulata, Seguenza, Cenni intorno le formaz. terz. Reggio Calabria, 1877, p. 27.

„ *formosa*, Jeffreys, "Valorous" Moll., Ann. and Mag. Nat. Hist., April 1877,[1] p. 319.

[1] In the heading of the paper this year is printed by mistake 1876, it was really 1877.

Seguenzia formosa, Watson, Prelim. Report, pt. 3, Journ. Linn. Soc. Lond., 1878, vol. xiv. p. 587.
„ *monocingulata*, Seguenza, Form. terz. Reggio Calabria, pp. 111 and 272.
„ *formosa*, Dall, "Blake" Moll., Bull. Mus. Comp. Zool. Camb., U.S.A., 1880, vol. ix. p. 47.
„ „ Verrill, Moll. N. Eng. Coast; Trans. Conn. Acad., vol. vi. (*in err.* vii.) 1884, p. 186, pl. xxxi. fig. 14 (shell), 14a (operculum), 14b (teeth).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 56. May 29, 1873. Lat. 32° 8′ 45″ N., long. 64° 59′ 35″ W. Off Bermuda. 1075 fathoms. Coral mud.

Var. lineata, Watson (Pl. VII. fig. 1).

Var. lineata, Watson, Prelim. Report, pt. 3, Journ. Linn. Soc. Lond., vol. xiv. p. 587.

? Station 120. September 9, 1873. Lat. 8° 37′ S., long. 34° 28′ W. Pernambuco. 675 fathoms. Red mud.

? Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Pernambuco. 350 fathoms. Red mud.

Habitat.—From N. Atlantic, 1450 fathoms. Bay of Biscay, Spain, and Portugal, 718–795 fathoms. Gulf of Mexico, 325 fathoms.

Fossil.—In the Upper Miocene of Calabria, and in the middle Pliocene at Trapani, Sicily (Seguenza).

Shell.—Small, conoidal; spire high; base inflated, white, glossy, with high spiral threads. *Sculpture:* Of spiral threads there are ten on the last whorl—one small, sharp, just at the suture; two, strong and sharp, of which the lower forms the basal carina; the upper, which is sometimes even the more prominent, lies a little higher than half-way between the basal and the sutural spiral: on the base there are seven, very equal in strength and in distribution—the first lies somewhat remote from the basal carina, and is separated from it by a broad shallow furrow; the last lies pretty close to the pillar and twines round it. On the upper whorls only the sutural and supra-carinal spirals are seen. There are microscopic spirals on all the surface. Longitudinals—there are many hair-like, sharply projecting, flexuous striæ, defining the lines of growth on the upper whorls, but these become very faint on the later whorls. *Colour* pure white with pearly translucency when fresh, but weathering opaque with a pearly gleam through the calcareous surface-layer. *Spire* high and conical, in some specimens a little depressed. *Apex* small, rounded, slightly tabulated, with the $1\frac{1}{4}$ embryonic whorl projecting, round and glossy but slightly roughened. *Whorls* 8, of slow and regular increase, angulated above, sharply carinated, inflated on the base, which is also slightly angulated by the third infra-carinal spiral. *Suture* only doubtfully traceable (under the microscope) in the middle of the sutural spiral. *Mouth* per-

pendicular. *Outer lip* thin and sharp, not patulous, not descending, with an open not deep angular sinus near the suture, from which the line of the edge runs outwards uninterrupted across the second spiral, and forms a round projecting point, retreating again so as to form a second sinus, smaller and sharper, in the line of the basal carina, from which it again runs outwards into a rounded point in the exterior basal furrow, and from this again retreats, sharply changing its direction on the fifth spiral, and then again retreating, as before, to the sixth spiral, where it forms a third, open, obtuse-angled sinus, and then passes in regularly to the centre. *Pillar-lip* twisted, with a deep rounded sinus above, a strong twisted tooth at about two-thirds of its length, another narrower rounded sinus below, and a sharp tooth at the point. The pillar is strengthened by a pad, which is spread out on the base so as to cover the seventh (counting from the suture) spiral, and envelops the pillar so as to leave a minute furrow behind it, but ceases at the pillar-tooth. *Umbilicus* completely closed (but in some young specimens presenting a minute hole, see var. *lineata*, Wats.) H. 0·2 in. B. 0·14, least 0·12. Penultimate whorl, 0·04. Mouth, height 0·07, breadth 0·06.

Dr Gwyn Jeffreys says that the operculum of this species "is ear-shaped, very thin, paucispiral (having only two whorls); the spire very small, excentric, and placed on the columellar side, thus resembling somewhat that of *Solarium* and *Adeorbis*." This form, according to Quoy and Gaimard, is shared by *Euchelus*, Philippi's subgenus of *Trochus*. In one rather young specimen of the species from Station 24, the dried-up remains of the animal are preserved, but I could not persuade myself to break the shell so as to secure the operculum.

To the young specimens from Pernambuco, var. *lineata*, Wats., I have put a query; for though I cannot separate them, still the longitudinal sculpture is stronger, and there is an umbilicus.

Some further and very recent observations on this species are given by Professor Verrill in his Mollusca of the New England Coast, p. 187, where he says, "Jaws thin, brown, irregularly ovate, the outer half covered with small tesselated elevations, becoming more prominent, blunt, or spatulate at the margin. Odontophore very small and slender; median tooth minute, thin, with the tip bent forward and ending in a minute central denticle; inner laterals with the tip small, curved forward, flat, unarmed, almost half as wide as the median; outer laterals long, slender, very acute, strongly curved."

2. *Seguenzia ionica*, Watson[1] (Pl. VII. fig. 3).

Seguenzia ionica, Watson, Prelim. Report, pt. 3, Journ. Linn. Soc. Lond., 1878, vol. xiv. p. 589.
" " Dall, "Blake" Moll., Bull. Mus. Comp. Zool. Camb., U.S.A., 1881, vol. ix. p. 48.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of Azores. 1000 fathoms. Pteropod ooze.

Habitat.—Gulf of Mexico.

[1] So called from its resemblance to the volute of the Ionic capital.

Shell.—Small, depressedly conical, sharply carinate, and spirally lirate, umbilicate, smooth. *Sculpture:* There is a sharp carina at the periphery; above this is a spiral lination formed by a sharp angulation, which on the upper whorls lies near the suture, but on the later whorls lies nearer the carina. The carina is margined below by a broad, shallow, round furrow, which is defined on its inner side by a sharp spiral thread. The umbilicus is defined by a sharp thread, outside of which is a shallow furrow and two or three more spiral threads; the centre of the base is nearly smooth, but has also some feeble spirals, which increase in strength toward the outside and toward the centre. Besides these, the whole surface is covered with sharp, not approximate, microscopic spirals. Longitudinals—there are numerous distinct lines of growth, which on the second whorl are like minute radiating spokes, and in the superior sinus (*i.e.*, between the suture and the first spiral) are sharp and distinct, and more remote than elsewhere on the surface, except on the base round the umbilicus, where, though less sharp, they are even more distinct. *Colour* a dead chalky white, with an exquisite pearly nacre below the outside layer and within the shell. *Spire* low and scalar. *Apex* flattened, the embryonic 1½ whorl, though a little tumid and large for the genus, being somewhat immersed. *Whorls* 7, of regular and slow increase until the last, which increases rather more rapidly; angulated above, tumid on the base, where (unlike *Seguenzia carinata*, Jeffr.) the edge of the umbilicus is the most projecting part. *Suture* linear, very minute, but defined by a very slight shelf, which projects horizontally just below it. *Mouth* perpendicular, squarish, but too much broken for description. *Outer lip*, the lines of growth show it to have the same three sinuses as those described in *Seguenzia monocingulata*, Seg. *Pillar-lip* patulous, a little reverted, scarcely twisted, with a broad deep sinus above, a strong, but not sharp, twisted tooth projecting at about three-fourths of its length, below which is a smaller sinus running out into a point at the extreme end of the pillar. *Umbilicus* large, funnel-shaped, deep, sharply defined by the edge of the base, the spiral of which runs out to the point of the pillar-lip. Within the umbilicus is a strongish undefined spiral furrow answering to the pillar-tooth, and the lines of growth are strongly defined. H. 0·18 in. B. 0·24; least breadth 0·21. Penultimate whorl 0·04.

This species differs from *Seguenzia carinata*, Jeffr., in being more depressed and broader, much more angulated and more lirate above, more tumid and lirate below; the carina is less flanged, and the most prominent part of the base is the edge of the umbilicus, not the centre of the whorl; here, too, the last whorl and the mouth are larger. The young of this species look disproportionately small and high.

3. *Seguenzia carinata*, Jeffreys (Pl. VII. fig. 2).

Seguenzia carinata, J. Gwyn Jeffreys, Biol. "Valorous" Cruise, Proc. Roy. Soc., No. 173, 1876, p. 201.
„ „ Watson, Prelim. Report, pt. 3, Journ. Linn. Soc. Lond., vol. xiv. p. 590, sp. 3.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. W. of Azores. 1000 fathoms. Pteropod ooze.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. San Miguel, Azores. 1000 fathoms. Volcanic mud.

Station 85. July 19, 1873. Lat. 28° 42′ N., long. 18° 6′ W. Palma, Canaries. 1125 fathoms. Volcanic mud.

Station 120. September 9, 1873. Lat. 8° 37′ S., long. 34° 28′ W. Pernambuco. 675 fathoms. Red mud.

Habitat.—North Atlantic, 690 fathoms. "Porcupine" Expedition, 1870, Bay of Biscay, off Spain and Portugal, 718–1095 fathoms.

Shell.—Small, broadly conical, rounded on the base, sharply angulated, umbilicate, thin, polished, vitreous. *Sculpture:* There is a sharp circumbasal carina, which on the spire sometimes projects a little above the suture, but is generally concealed by the succeeding whorl. In the middle of the whorls is a slight spiral thread, which on the earlier whorls is much stronger and somewhat lower in position than on the last; it defines the inferior edge of the generic sinus. The base is margined by a broad flat flange, and the edge of the umbilicus is defined by a fine sharp thread. Besides these there are some faint traces of microscopic spirals on the whole surface, especially on the base; and the basal sinus has on its outer edge more or less traces of a fine spiral thread. Longitudinals—there are many hair-like flexuous lines of growth. *Colour* glassy when fresh and young, in older shells opaque white, but even then showing only the faintest trace of pearly nacre. *Spire* conical, rather depressed, and with a slight convexity of its contour-lines. *Apex* very small and sharp, flattened on the one side, and with the minute embryonic 1½ whorl projecting roundly on the other. *Whorls* 7, of gradual increase, slightly convex above, flatter below, and a very little constricted above the sutural flange, whose edge is sharp below and rounded above. The base projects rather sharply from the inner side of the carinal flange, and then passes rather flatly across to the edge of the umbilicus, into which it slopes steeply. *Suture* linear and a very little impressed. *Mouth* perpendicular, almost square, but a little rounded both on the sides and at the angles. *Outer lip* sharp and thin, not patulous, not descending; the curves of its edges are similar to those described in *Seguenzia monocingulata*, Seg., there being three sinuses, one near the suture, a second at the carina, and a third toward the exterior of the base. *Pillar-lip* is patulous and a little reverted, scarcely twisted, with a broad deep sinus above, a strong twisted projecting tooth at about three-fourths of its length, below which is a smaller sinus running out into a point at the extreme end of the pillar. *Umbilicus* large, funnel-shaped, deep, defined by a fine spiral thread, which runs out to the point of the pillar-lip; within the umbilicus is a shallow furrow answering to the pillar-tooth, and above is another spiral thread, stronger, but less sharp than that on the edge; the curved lines of growth are strongly defined in the umbilicus. H. 0·15 in. B. 0·17, least 0·15. Last whorl 0·037. Mouth, height 0·049, breadth 0·5.

This species is so thin and transparent that scarcely any trace of nacre can be recognised; but by carefully occluding the light on the outside, and thus having all the light reflected from the inside of the mouth, the pearly lustre is distinctly visible, especially at the outer upper corner.

4. *Seguenzia trispinosa*,[1] Watson (Pl. VII. fig. 4).

Seguenzia trispinosa, Watson, Prelim. Report, pt. 3, Journ. Linn. Soc. Lond., vol. xiv. p. 591.

Station 120. September 9, 1873. Lat. 8° 37′ S., long. 34° 28′ W. Pernambuco. 675 fathoms. Red mud.

Shell.—Small, high, conical, scalar, with three rows of tubercled lirations, umbilicate, thin, smooth. *Sculpture:* There is a sharp circumbasal carina, above this is a broad shallow furrow; about one-third up the whorl is a narrow and blunt liration; a little more remote is a third, separated by a narrow, horizontal, flat surface from the suture. All these three lirations are ornamented with little tubercles or blunt spines, which are strongest on the highest thread, and there number about twenty-five on the body-whorl, while on the second thread they are about twenty-eight. The base, which is rather flatly arched, has round the outside a flat surface hardly deep enough to be called a furrow, defined on the inner side by a clear narrow line, within which the curve of the base rises a little and has some faint spirals. The edge of the umbilicus is sharply defined by a fine line, outside of which is a broad shallow furrow bordered externally by a slight spiral; then comes another narrower furrow, the outer side of which is the most projecting part of the base; beyond this the base is rather flat and has some obsolete spirals. On the upper whorls the spirals are feeble and without tubercles, which only appear distinctly on the fourth whorl. Longitudinals—the flexuous lines of growth are very faint. *Colour* porcellanous when young and fresh, but weathering to a chalky white, with a pearly nacre below the thin surface and within the mouth, especially at the outer upper corner. *Spire* conical, high, scalar. *Apex* very small and sharp, flattened on the one side, and with the minute $1\frac{1}{4}$ embryonic whorl projecting tumidly on the other. *Whorls* $7\frac{1}{2}$, of gradual increase: the upper ones are rounded; the latter flat below the suture, then angulated, then flat on the conical slope of the spire, and then a very little constricted above the carina; on the base they are very slightly rounded, with a flat and feebly impressed but sloping border round the outside; they are sharply angulated at the umbilicus. *Suture* linear, but strongly defined by the constriction and impressed angulation of the shell at that point. *Mouth* perpendicular, nearly square. *Outer lip* sharp and thin, not patulous, not descending. The curves are very faintly indicated by the lines of growth, but are similar to those described in *Seguenzia monocingulata*, Seg., there being three sinuses, one near the suture between the first and second spinose threads, a second, very small but sharp, at the carina,

[1] From the three rows of spinous lirations.

and a third toward the exterior of the base. *Pillar-lip* is patulous and reverted, with a furrow behind it, twisted, with a broad deep sinus above; a strong twisted projecting tooth at about two-thirds of its length, below which is a smaller sinus running out into a point at the extreme end of the pillar; this point corresponds to the umbilical carina. *Umbilicus* more open than large, perpendicular and deep, being only slightly narrowed by the reverted pillar-lip and by the corresponding ridge which twines spirally round the pit-wall. Below this ridge is a very strongly marked furrow, which corresponds to the pillar-tooth. H. 0·14 in. B. 0·15; least breadth 0·13. Last whorl 0·06. Mouth, height 0·05, breadth 0·06.

This species most resembles *Seguenzia carinata*, Jeffr., but is narrower and sharper, and the last whorl is larger; the suture is angulately impressed instead of being faintly linear; the spiral threads are stronger, and are picked out with tubercles; the base is more equably curved, the spirals on it are stronger: the umbilicus is smaller, and is more strongly defined, not only by the stronger carina, but by the extracarinal furrow. The pillar-tooth comes in higher up than in that species.

6. *Stomatella*, Lamarck, 1809.

Species.

1. *Stomatella imbricata*, Lam. 2. *Stomatella* (*Gena*) *caliginosa*, H. and A. Adams.
3. *Stomatella* (*Gena*) *nigra*, Quoy and Gaimard.

1. *Stomatella imbricata*, Lamarck.

Stomatella imbricata, Lamarck, Anim. s. vert., vol. vi. (2), p. 209, and (ed. Desh.) vol. ix. p. 16, sp. 1.
" " Deshayes, Encyl. méthod., vol. iii. p. 984, No. 1, pl. cccl. fig. 2.
Stomatia imbricata, Sowerby, Genera, vol. ii. pl. cxciii. fig. 1.
Stomatella imbricata, A. Adams, Proc. Zool. Soc. Lond., 1850, p. 30.
" " A. Adams in Sowerby, Thes. Conch., pt. 15, vol. ii. p. 833, sp. 1, pl. clxxiv. fig. 1.
" " Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 218, No. 201.

April–May 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Torres Straits (Jukes), Port Jackson (Angas).

2. *Stomatella* (*Gena*) *caliginosa*, H. and A. Adams.

Stomatella caliginosa, H. and A. Adams.
Gena caliginosa, Reeve, Conch. Icon., vol. xix. pl. ii. fig. 10.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—?——(Reeve).

In attributing this species to H. and A. Adams, I have simply quoted the Conchologia Iconica, which gives no further information; nor have I been able to discover any. It is perhaps a mere MS. name.

3. *Stomatella* (*Gena*) *nigra*, Quoy and Gaimard.

Stomatella nigra, Quoy and Gaimard, Voy. Astrol., vol. iii. p. 307, pl. lxvi. *bis*, figs. 10–12.
„ „ Lamarck, Anim. s. vert. (ed. Desh.), vol. ix. p. 18,[1] sp. 6.
Gena nigra, A. Adams, Proc. Zool. Soc. Lond., 1850, p. 37.
Stomatella nigra, A. Adams in Sowerby, Thes. Conch., pt. 15, vol. ii. p. 829, sp. 4, pl. clxxiii. figs. 14–16.
„ „ Reeve, Conch. Icon., vol. xix. pl. ii. fig. 11.

? Station 113A. September 1, 1873. Lat. 3° 47′ S., long. 32° 24′ 30″ W. Anchorage, Fernando Noronha. 25 fathoms. Volcanic sand and gravel.

April 17, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Tongatabu and Sandwich Islands (Quoy and Gaimard), Princes Island in the Bight of Biafra, West Africa (British Museum).

The specimen of this shell from Station 113A which I have had to identify is very young, and I could not have attributed it to this species, even with an expression of doubt, but for the fact that it does seem specially to agree with the British Museum specimens from the West Coast of Africa, a fact which brings the species within a possible distance of Fernando Noronha. At the same time, one cannot but feel that there is a mistake somewhere. I think that mistake does not lie in my identification: I am sure it does not in the Challenger register of localities.

As to the specimens from Port Jackson, I am indebted to Mr E. A. Smith for identifying them for me. They are very young, and had been overlooked at the proper time for identification, and turned up in a bottle with some larger mollusks. I had thought they were probably *Gena strigosa*, A. Ad.; but Mr Smith says, "I cannot separate this from *Gena nigra*, Q. and G., var. of the Cumingian collection named by A. Adams." This remark of Mr Smith's strengthens a doubt I had already felt of the distinctness of these two species. Mr Angas does not give *Gena nigra*, but only *Gena strigosa* in his list of Port Jackson Mollusca (Proc. Zool. Soc. Lond., 1867, p. 218).

7. *Scissurella*, D'Orbigny, 1823.

Species.

1. *Scissurella crispata*, Flem.
2. *Scissurella alta*, n. sp.
3. *Scissurella aëdonia*, n. sp.
4. *Scissurella coronata*, n. sp.
5. *Scissurella declinans*, n. sp.
6. *Scissurella obliqua*, n. sp.

1. *Scissurella crispata*, Fleming.

Scissurella crispata, Fleming, Mem. Wern. Soc., vol. vi. p. 385, pl. vi. fig. 3.
„ „ Forbes and Hanley, Brit. Moll., vol. ii. p. 544, pl. lxiii. fig. 6.
„ „ Loven, Ind. Moll. Skand., Öfversigt Vetensk. Akad. Förh., 1846, p. 152, No. 151.
„ *striatula*, Philippi, Enum., vol. ii. p. 160, No. 2, pl. xxv. fig. 33.
„ *aspera*, Philippi, Enum., vol. ii. p. 160, fossil, pl. xxv. fig. 17.

[1] This page in Lamarck is by mistake numbered 28.

Scissurella crispata, Searles Wood, Crag. Moll. (Pal. Soc.), vol. i. p. 163, pl. xv. fig. 13.
" " Jeffreys, Brit. Conch., vol. iii. p. 283, pl. vii. fig. 2, and vol. v. p. 201, pl. lx. fig. 3.
" " Weinkauff, Conch. Mittelm., vol. ii. p. 385, sp. 3.
" " Monterosato, Enumerazione, p. 19.
" " G. O. Sars, Moll. Reg. Arct. Norv., p. 126, pl. viii. fig. 7.
" " Seguenza, Form. Terz. Calabria, pp. 272, 320.
" " Verrill, Additions to New England Mar. Moll., Trans. Connect. Acad., vol. v. p. 533.
" " Jeffreys, Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1883, p. 88, sp. 1.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 145. December 27, 1873. Lat. 46° 43′ S., long. 38° 4′ 30″ E. Between Marion Island and Prince Edward Island. 140 fathoms. Volcanic sand.

Habitat.—From Greenland to New England and from Spitzbergen to the Mediterranean, from 4 to 790 fathoms (Jeffreys), from 60 to 300 fathoms (G. O. Sars), 268 to 365 fathoms (Verrill).

Fossil.—In later glacial beds, Norway (M. Sars). Middle and Upper Pliocene, Calabria (Seguenza). Coralline crag, England (S. Wood).

2. *Scissurella alta*, n. sp. (Pl. VIII. fig. 1).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores, 450 fathoms. Volcanic mud.

Shell.—Globose, thin, transparent, strongly sculptured, with a tumid base, a small umbilical chink, a short subscalar spire (on which the old canal slit forms the edge of the successive whorls), and a smallish somewhat prominent rounded tip. *Sculpture:* Longitudinals—frequent, strongish, rounded, curved riblets radiate out from the suture; they are of much the same strength on the base as above. Spirals—at about one-third of its height from the suture the last whorl is carinated somewhat feebly by the old canal scar, which is depressed and finely scored across between the narrow slightly projecting lip-edges: on the upper surface a few very obsolete spirals may be seen; the whole base is reticulated by spiral threads, which are closer set, but almost as strong as the radiating riblets. *Colour* white. *Spire* rather depressed, conical, rising regularly to the extreme tip. *Apex* round and prominent. *Whorls* 5, flat and sloping above, carinated; below the carina towards the mouth slightly openly constricted and then tumid on the base. *Suture* impressed. *Mouth* round. *Outer lip* freely curved. *Inner lip* thin, concave at the base

of the pillar, straight, rounded, and very much expanded on the pillar, with an angulated and very patulous junction to the outer lip in front: there is a small umbilical furrow and chink half hidden behind it. L. 0·082 in. B. 0·08. Mouth, length 0·049, breadth 0·048.

This species extremely resembles *Scissurella eximia*, Seg. (see Form. Terz., p. 272, pl. xvi. fig. 32), both in form and sculpture, but the base is more tumid, the whole shell more compressed, and the apex is a little larger and more exserted. In its strong radiating ribs it is like *Scissurella staminea*, A. Ad., from Japan, but is much larger and higher.

3. *Scissurella aëdonia*,[1] n. sp. (Pl. VIII. fig. 3).

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Station 135c. October 17, 1873. Lat. 37° 25′ 30″ S., long. 12° 28′ 30″ W. Nightingale Island, Tristan da Cunha. 100 to 150 fathoms.

Shell.—Depressedly globose, strongly sculptured, with a rather high scalar spire, exserted whorls, a very sharp and expressed carina, a minute tabulated apex, a strong and impressed suture, a tumid base, and a large pervious but half-covered umbilicus. *Sculpture:* the radiating ribs are pretty strong, sharp, and equal above and below the canal. Spirals—the whole surface is closely, sharply, and regularly scored with fine threads, which are a little stronger (but not quite so sharp) on the base than above. *Colour* white. *Spire* high, scalar, each whorl rising and expanding above the suture. *Apex* very small and tabulated. *Whorls* 5; they slope down flatly (barely convex) from the suture, are very sharply carinated at the canal, the under edge of which in particular is prominent and expressed; below the canal they contract into the suture; the base is tumid. *Suture* strongly impressed and very distinct. *Mouth* quite round. *Outer lip* thin, regularly arched. *Inner lip* on the body thin, and very short, regularly curved throughout, on the pillar thin and patulous. *Umbilicus* large and pervious, but partly covered by the pillar-lip. L. 0·099 in. B. 0·09. Mouth, length 0·05, breadth 0·051.

This species has the strong lamellæ of *Scissurella lamellata*, A. Ad., from Japan, but these are here still stronger, with a high spire and tumid base. It has some resemblance to *Scissurella umbilicata*, Jeffr., but the spire is much higher, the whorls more exserted and contracted below the canal, and the sculpture is quite different.

4. *Scissurella coronata*, n. sp. (Pl. VIII. fig. 4).

September 28, 1875. Tahiti harbour, near the reefs. 20 fathoms.

Shell.—Obliquely discoidal, strongly ribbed and spiralled, flattened above, with the apex rising like a coronet above the flat upper surface of the whorls, a largish very oblique

[1] ἀηδόνιος, belonging to a nightingale.

oval mouth and a large funnel-shaped pervious umbilicus. *Sculpture:* Longitudinals—above the canal the surface is distantly, radiatingly, and curvedly undulated (like a *Haliotis*), with minute, sharp, close-set threadlets in the intervals; below the canal there are high, narrow, distant, very curved ribs, which begin feebly below the canal-ridge, and die out at the edge of the umbilicus. Spirals—the old canal rises on a rounded and very prominent ridge, which is perpendicular on the outer and elevated on the inner side; the canal itself is not depressed, but is very strongly concavely scored. This ridge lies between the suture and the periphery, rather nearer to the latter, and forms a crest to the whorls. Above this ridge the slightly depressed surface is scored with very fine threads, parted by little rounded furrows of about twice their breadth; below the canal-ridge these spiral threads are stronger, and give a serrated crest to the longitudinal riblets. *Spire* scalar, but very depressed, the square steps of the whorl edges being very short. *Apex* small, forming a flat, square-edged coronet, with a slightly depressed minute tip. *Whorls* 3½ to 4, flat or slightly concave above, highly and squarely keeled by the canal-ridge, below which they are very slightly constricted; after this they are tumid to the periphery and on the base. *Suture* angularly impressed. *Mouth* narrowly oval, very oblique, largish. *Outer lip* descending and inflected above, very regularly curved, deeply cut by the fissure, slightly patulous towards the lower outer corner. *Inner lip* very shortly and thinly appressed on the body between the periphery and the edge of the wide-open pervious umbilicus. On the pillar it is barely expanded, is very thin, and runs straight but very obliquely to the point of the base. L. 0·048 in. B. 0·065. Mouth, length 0·033, breadth 0·033.

This is one of the most beautiful species of this very beautiful genus. Its sculpture and form are very marked.

5. *Scissurella declinans*, n. sp. (Pl. VIII. fig. 2).

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Raine Island, Cape York, North-Eastern Australia. 155 fathoms. Coral sand.

Shell.—Square above and tumid below, very delicately, sharply sculptured, with a short scalar spire, a minute tabulated apex, an angulated suture, descending mouth,[1] and a large shallow funnel-shaped carinated umbilicus. *Sculpture:* on the last whorl there are very fine, sharp, close-set, curved, radiating threads, which on the upper whorls are strong riblets; between them the whole surface is finely, closely, microscopically scored with hair-like lines of growth. Spirals—the whole shell is delicately marked with very fine, regular, rather distant threadlets; a little way below the suture and within the periphery is a sharp, narrow keel formed by the upstanding edges of the old canal-ridge. *Colour* dull hyaline.

[1] Whence the name.

Spire slightly raised, and scalar in very short angular steps. *Apex* extremely small, tabulated. *Whorls* 4, of very rapid increase, almost perfectly flat above, keeled by the canal-ridge, below this slightly constricted and then tumid. *Suture* obtuse angled. *Mouth*, round, small, not very oblique; the fissure is very narrow. *Outer lip* very regularly curved. *Inner lip* very short and thin on the body, sharp and thin and not much expanded on the pillar. *Umbilicus* defined by a keel and channelled. L. 0·044 in. B. 0·063. Mouth, length 0·03, breadth 0·031.

A small species of great beauty, differing in form of sculpture from *Schismope carinata*, Wats., with which it has some relation.

6. *Scissurella obliqua*, n. sp. (Pl. VIII. fig. 5).

January 19–20, 1874. Royal Sound, Kerguelen Islands, shore.

Shell.—Small, depressedly and obliquely globose, rough, and unadorned in any way, with a small, rounded, barely prominent apex, a large, round, very descending mouth and small umbilicus. *Sculpture:* none, but some harsh and irregular lines of growth. *Colour* semi-transparent white beneath a yellow epidermis. *Spire* slightly raised, and more or less subscalar. *Apex* very small, and the extreme tip is tabulated. *Whorls* 3½ to 4, of very rapid increase, well rounded, but a little flatter and more sloping above than below; they are scored by the old canal, which lies about half-way between the periphery and the suture, presenting no ridge, but scored across as usual with concave lines. *Epidermis* yellow, membranaceous, rather thick. *Suture* slightly openly impressed. *Mouth* round, but very oblique. *Outer lip* thin and sharp, shortly but rather widely cleft; a little inflected above, excessively patulous on the base. *Inner lip* thickened, extremely short, and slightly disunited from the body; very concave on the pillar, where it is bent back so as to cover the umbilical perforation, which presents a narrowed and not pervious but very strong depression. *Operculum* large, corneous, thin, yellow, with central nucleus and many spiral whorls, which seem to become more numerous toward the margin. L. 0·037 in. B. 0·041. Mouth, length 0·024, breadth 0·026.

This is a very small and unattractive-looking species, entirely destitute of the beautiful sculpture common in the genus. Compared to *Scissurella supraplicata*, E. Sm., from Swains Bay, Kerguelen, this is much smaller, more depressed, more oblique, and unsculptured.

8. *Schismope*, Jeffreys, 1856.

This genus is the *Woodwardia* of Crosse and Fischer, which they put along with *Pleurotomaria* in the Family Pleurotomariidæ.

I do not know that it can fairly be separated from *Trochotoma*, Deslongchamps,[1] a Laissic and Jurassic fossil. That genus is indeed said to be nacreous, and the received distinction between *Pleurotomaria* and *Trochotoma* on the one hand, and *Scissurella* and *Schismope* on the other, is that the former are nacreous, which the two latter are not (see Tate, Appendix to Woodward's Manual, p. 38); but Dr Gwyn Jeffreys has broken down one-half of that distinction by showing (Brit. Conch., vol. iii. p. 282) that "the nacreous inner layer of *Schismope crispata* is very evident when the shell is broken or has been accidentally exfoliated." He does not, it is true, say this expressly of *Schismope*, but he classes it in the Family Scissurellidæ, one of the characters of which he states to be that the shells of that genus are "nacreous" (*loc. cit.*) I have not been able to establish the existence of this feature positively in *Schismope*, but the failure is very likely due to the thinness of the shells and the haste of a search to which much time could not be given.

Being thus in doubt, I have accepted the genus on the principle that it has as much right to exist as *Scissurella* has, and that while that genus may be distinguished from *Pleurotomaria* by size and colour, *Schismope* may be separated from *Trochotoma* by the same characters, though, as regards this last genus, the question of colour is somewhat more doubtful.

At one stage of its development the shell of *Schismope* resembles a young *Trochus*; somewhat later it is often indistinguishable from *Scissurella* except by the peculiar form of its umbilicus as shown in some of its species. In neither genus is the cut in the outer lip to be found in the young shell. Only after several whorls have been produced is the fissure formed; and the formation is effected, not by the absorption of shell already formed, but by the leaving of a cut in the fresh shell as it grows, the upper end of this rift being plugged up by degrees, so as to prevent its becoming unduly long. In *Scissurella* this process goes on so long as the shell growth continues. In *Schismope*, on the contrary, as the shell approaches maturity the front of the fissure is bridged across by a layer of shell, the lip edge thus becoming continuous, and the rift being transformed into a foramen. It is thus in the complete stage of the shell alone that the form of the lip-cut will serve to distinguish the two genera.

Species.

1. *Schismope tabulata*, n. sp. 2. *Schismope lacuniformis*, n. sp.
3. *Schismope carinata*, n. sp.

1. *Schismope tabulata*, n. sp. (Pl. VIII. fig. 7).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Obliquely discoidal, finely ribbed and spiralled, flattened above, with a very small slightly depressed apex, impressed suture, very large round mouth, large lacuniform umbilicus, and a last whorl carinated in its latter half by the prominent upstanding canal-

[1] This genus was published in 1841, and not, as is often asserted, in 1843. It is distinguishable from *Ditremaria*, D'Orb. (1843) = *Rimulus*, D'Orb. (1839), not *Rimula*, Defr., by having only one small oval foramen instead of two united by an open canal.

ridge. *Sculpture:* Longitudinals—there are fine, sharp, pretty close-set, curved, radiating riblets, which are nearly equal above and below the canal; between these in the furrows there are fine lines. Spirals—fully one-half of the last whorl is keeled by the canal-ridge, which forms a crest round the top of the whorl a little within the periphery; its outer edge is slightly overhanging, its inner edge raised a very little; the canal is narrow, and sinks between these two edges: it begins in a small oval and ends in a tumid swelling, in which is a small oval hole, sharp-pointed in front. This hole is not cut in the shell after that has been formed, but is developed along with it, the lines of growth conforming to the foramen. The hole is continued within the shell by prominent lips, and a strong little furrow is carried in the substance of the shell from the hole on to the edge of the outer lip. This furrow is marked outside by a very slight ridge, but still more by the interruption of the riblets, which curve sharply back, becoming at the same time very faint. The whole surface is scored and the riblets serrated by sharp, fine, remote threads, between each two of which towards the mouth a weaker similar one appears. *Spire* quite flat. *Apex* very small, slightly depressed. *Whorls* 3 to 3½, of very rapid increase; above they are barely convex, on the base they are tumid. *Suture* slightly impressed. *Mouth* large, round, very oblique. *Outer lip* very descending, flat above, well curved and patulous below: it is continued, as in *Lacuna*, by a sharp keel, which runs straight up into and encloses the umbilicus, but does not include its outer edge. *Inner lip* short but strongish and defined on the body; it very patulously overhangs the umbilicus, with a broad rounded furrow between its sharp umbilical edge and its inner rounded border; the sharp umbilical edge runs straight down to join the outer lip on the base, and the inner border runs down within the basal lip, flattening out into a very slight callus. L. 0·055 in. B. 0·083. Mouth, length 0·053, breadth 0·047.

2. *Schismope lacuniformis*, n. sp. (Pl. VIII. fig. 8).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Obliquely, flatly globose, very finely striated longitudinally and spirally, with rounded whorls, a very small, slightly raised apex, barely impressed suture, very large gibbously round mouth, large lacuniform[1] umbilicus, and a mere dot of a fissure. *Sculpture:* the whole surface is striated with very fine, slightly raised, distant, very oblique longitudinal threads, and with very similar spiral threads, which are a little finer and closer, but on the upper whorls relatively stronger; these longitudinals and spirals (the latter on the top) cross one another, but not at right angles, and do not form tubercles at their intersections. *Spire* short, slightly raised. *Apex* very small, prominent; the first whorl and a half seem to be

[1] Hence the name.

embryonic, and are very finely, microscopically, reticulately scratched. *Whorls* 4, of not very rapid increase, convex above, rounded at the periphery, and a little excavated on the base by the large-mouthed umbilicus. *Mouth* large, very oblique, and round, but a considerable section of the circle is cut off by the irregular and twisted pillar. *Outer lip* descending, well arched all round; beyond the point of the pillar it sweeps on with a sharp, prominent edge, enclosing the umbilicus, up into which it plunges direct. *Inner lip* strong and defined, but excessively short and retiring on the body, being cut quite away so as completely to expose the umbilicus, deeply but widely sinuated at the top of the pillar, which is slightly twisted, has an oblique, sharp, rounded, but not at all patulous edge; is bluntly toothed, and slightly truncate at the point, which does not run out to the edge of the outer lip, but dies out gradually just within it. *Puncture* consists of a single most minute oval pore, which opens in a slight bulge of the exterior a little way back from the lip-edge, and has a very slightly thickened margin inside; from it a slight straight furrow runs forwards along the inner surface of the shell; the surface longitudinals bend sharply backwards at the hole, and a little way before the opening is reached, as if preparation were being made for the formation of the opening before it was accomplished. L. 0·053 in. B. 0·078. Mouth, length 0·043, breadth 0·044.

The peculiarity of the outer lip in its relation to the umbilicus in this and the preceding species, a feature which often occurs also in the fossil genus (*Trochotoma*), will probably offer a sub-generic, or even generic distinction, for those who love to multiply our difficulties of nomenclature.

3. *Schismope carinata*, n. sp. (Pl. VIII. fig. 6).

April 23, 1874. Port Jackson, Sydney, Australia. 6–15 fathoms.

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Raine Island, Cape York, North-Eastern Australia. 155 fathoms. Coral sand.

Shell.—Tumid, but depressed, finely ribbed and strongly keeled, with a flattened but scalar spire, convex whorls, a minute apex, a tumid base, and a large funnel-shaped, shallow, carinated umbilicus. *Sculpture:* there are both above and below sharp, little, distant, curved, radiating riblets, between which the whole surface is exquisitely scratched with microscopic lines. Spirals: there is a strong, rounded, expressed double keel, formed by the two edges of the canal scar, which encircles rather more than the whole of the last whorl (except near the mouth); this canal is sunken and is strongly scored. Above the canal the surface is smooth, but a few microscopic spiral threads exist; below and remote from this canal there are on the base three, strong, round to square threads, of which the highest is the strongest, and tends to become flattened and expanded into a great spiral fold of the shell rather than a mere thread; besides these another similar but weaker encircles the umbilicus. *Colour* hyaline, but hardly glossy. *Spire* slightly exserted, the whorls

being flat on their upper surface, and rising roundly from the suture. *Apex* very small, tabulated. *Whorls* 4, of very rapid increase, very strongly keeled by the canal-ridge, and angulated by the largest and highest thread; the base is very tumid. *Suture* rectangular. *Mouth* oval, very oblique. *Outer lip* runs in straight lines and angles, but is somewhat curved on the base. *Inner lip* very thin and very short on the body, extremely retiring, being cut quite away, so as completely to expose the umbilicus, concave on the pillar, where it is sharp edged; in front it is subtruncate and slightly twisted, but passes on into the outer lip-edge at the umbilical carina. *Umbilicus* large, defined by a keel, shallow. *Puncture* very long and narrow, blunt and rounded at the upper end, and extending to a long fine point in front; it opens on the top of a swollen ridge; it has no projecting lips on the inner side of the shell, but is produced there in a long narrow furrow. L. 0·052 in. B. 0·062. Mouth, length 0·04, breadth 0·032.

The young of this species, it is almost certain, will be taken some day for a *Trochus*, and the adolescent for a *Scissurella*, the great length of the old canal and the open foramen being peculiarly deceptive. In this state, when nearly full-grown, it is singularly like *Scissurella costata*, D'Orb., from the Mediterranean, but its sculpture is different, the mouth is larger, and the umbilicus is wider and yet more shallow.

9. *Homalogyra*, Jeffreys, 1867.

As a question of mere priority *Ammonicerina*, Costa, is earlier than Dr Gwyn Jeffreys' name for this genus; but we have already among the mollusca *Ammoceratita*, Lam., *Ammonoceratite*, Lam., *Ammonoceras*, Lam., and *Ammonocerus*, King. Any man who can keep all these five distinct must have one of those memories which is ordinarily associated with deficiency of judgment, and which in any case must put him quite out of practical sympathy with his fellows.

Homalogyra atomus (Philippi).

Truncatella atomus, Philippi, Archiv f. Naturgesch., 1841, vol. vii. pt. 1, p. 54, pl. v. fig. 4.
„ „ Philippi, Enum. Moll. Sicil., vol. ii. p. 134, sp. 4, pl. xxiv. fig. 5.
Skenea nitidissima, Forbes and Hanley, Brit. Moll., vol. iii. p. 158, pl. lxxiii. figs. 7, 8 (but not of Adams).
Homalogyra atomus, Jeffreys, Brit. Conch., vol. iv. p. 69, sp. 1, pl. i. fig. 5, and vol. v. p. 209, pl. lxx. fig. 2.
Spira nitidissima, Weinkauff, Conch. d. Mittelm., vol. ii. p. 266.
Homalogyra atomus, Monterosato, Enumeraz., p. 28.
„ „ Sars, Moll. Reg. Arct. Norv. p. 215, No. 128, pl. xxii. fig. 21, and pl. viii. (*bis*) fig. 1 (*radula*).

Station 145. December 27, 1873. Lat. 46° 43′ S., long. 38° 4′ 30″ E. Between Marion Island and Prince Edward Island. 140 fathoms. Volcanic sand.

Habitat.—From Vadsö on the Varanger Fjord, east of the North Cape (Sars), to Madeira (Watson), and the Mediterranean (Jeffreys).

Fossil.—From the later glacial beds of Norway (Sars), and of Scotland (Jeffreys).

There is but a single slightly weathered specimen of this species in the Challenger collection, and the step from Madeira to lat. 46° S. is so enormous, that I was glad to have my identification of the specimen confirmed by one who knows the species so well as Dr Gwyn Jeffreys does. It is extremely abundant in Madeira, and careful search will probably supply very many additional localities for its dwelling.

10. *Cyclostrema*, Marryat, 1818.

Species.

1. *Cyclostrema excavatum*, n. sp. 2. *Cyclostrema sulcatum*, n. sp.
3. *Cyclostrema conicum*, n. sp.!

1. *Cyclostrema excavatum*, n. sp. (Pl. VIII. fig. 10).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Discoidal, keeled, strong, porcellanous white under a dark-brown epidermis, with an entirely open umbilicus and a small mouth. *Sculpture:* Longitudinals—there are fine, slight, close lines of growth. Spirals—on the last whorl a little below the suture there is a bluntly angulated keel, which on the previous whorls bisects the space between the sutures; within this keel a broad shallow furrow reaching to the suture is excavated; towards the mouth on the base is another very blunt and slighter keel. *Colour* horny or porcellanous white, covered with a dark yellowish-brown membranaceous epidermis. *Spire* barely raised, but scalar, and in profile just showing each whorl. *Apex* not very small, exserted, smooth, consisting of one whorl and a half. *Suture* broadly and angularly impressed. *Whorls* 4 in all, of slow increase till the last, which is largish. *Mouth* a little oblique (*i.e.*, the upper lip projects slightly in front of the basal lip), round, but a little elongated between the keel above and that on the base, at each of which, too, it is subangulated. *Outer lip* not at all patulous, thin, with a very slight thickening within the mouth. *Inner lip* thickened, but very short on the body. *Umbilicus* a wide, open, shallow funnel, exposing every whorl. H. 0·048 in. B. 0·087. Mouth, height 0·03, breadth 0·03.

2. *Cyclostrema sulcatum*, n. sp. (Pl. VIII. fig. 11).

Station 120. September 9, 1873. Lat. 8° 37′ S., long. 34° 28′ W. Off Pernambuco. 675 fathoms. Red mud.

Shell.—Depressedly globose, keeled, thin, dead white under a dirty-brown epidermis, with a deep funnel-shaped umbilicus and a large mouth. *Sculpture:* Longitudinals—

there are fine close-set lines of growth. Spirals—on the last whorl a little below the suture there is a bluntly angulated keel, on the top of which there is a slight rounded thread; between this keel and the suture the whorls are slightly excavated; the upper whorls are bisected by the keel; on the base, rather within the middle of it and bordering the umbilicus, is another slightly sharper keel, inside which is a broad shallow furrow with one or two faint spiral threads in the bottom of it; within this is a strong thread, followed still farther within by another furrow like the first, which is again bordered by a thread, and within this the umbilicus becomes poriform. *Colour* dead white under a slightly mottled or longitudinally banded smoky-brown membranaceous epidermis. *Spire* slightly raised and scalar. *Apex* not very small, smooth, consisting of one whorl and a half; the extreme tip is not prominent. *Suture* broadly and angularly impressed. *Whorls* 4 in all; the last is large. *Mouth* largish, a little oblique, suboval, slightly pointed above at the insertion of the outer lip. *Outer lip* slightly patulous, thin, with a very slight thickening within the mouth. *Inner lip* thickened at the upper corner, thin but not very short across the body. *Umbilicus* strongly defined and marginated, with a broad open mouth rapidly contracting to a pervious pore. H. 0·058 in. B. 0·078. Mouth, height 0·042, breadth 0·037.

This species differs from *Cyclostrema excavatum*, Wats. (which it much resembles), in the form of the shell and of the mouth, as also, and specially, in the form and sculpture of the umbilicus.

3. *Cyclostrema conicum*, n. sp. (Pl. VIII. fig. 9).

Station 120. September 9, 1873. Lat. 8° 37′ S., long. 34° 28′ W. Off Pernambuco. 675 fathoms. Red mud.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Small, conical, subscalar, white, ribbed, and spiralled, with a raised spire, a small, slightly raised, rounded apex, an impressed suture, a small round mouth and a poriform umbilicus. *Sculpture:* Longitudinals—the last whorl is girt round with about 15 to 25 small, sharp, regular, equal, distant, lamelliform riblets, which run continuously from whorl to whorl. Spirals—the whorls are faintly scored with very feeble threadlets and furrows; these vary considerably in sharpness and closeness. *Colour* white, not glossy. *Spire* broadly conical, subscalar. *Apex* small, consisting of 1½ smooth, turbinated whorls, with the tip slightly raised. *Whorls* 4½, well rounded, short, small, all except the last, which is tumid, with a short rounded base. *Suture* deeply impressed. *Mouth* small, round. *Outer lip* thin, not expanded. *Inner lip* continuous, but very short and not disjointed on the body, and having behind it a small funnel-shaped poriform umbilicus. H. 0·06 in. B. 0·055. Mouth, height 0·03, breadth 0·028.

This species has some faint resemblance to *Scalaria nana*, Jeffr.; but is much squatter, with a shorter base and a blunter apex. It is certainly an exceptional form for the genus under which it is placed, but I know no better place for it.

11. *Phasianella*, Linne, 1804.

Phasianella pulla (Linne).

Turbo pullus, Linne, Syst. Nat., 12th ed., p. 1233, No. 610.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 49, sp. 31, and (ed. Desh.) vol. ix. p. 217, sp. 31.
„ „ Dillwyn, Cat., vol. ii. p. 822, sp. 17.
Phasianella pulla, Deshayes, Encyclop. méthod., vol. iii. p. 750, sp. 2.
„ „ Deshayes, Morée Zool., vol. iii. p. 145, No. 179.
„ „ Philippi, Enum. Moll. Sicil., vol. i. pp. 187, 188, and vol. ii. p. 158, sp. 1.
„ „ D'Orbigny (in Webb and Berthelot), Moll. Canaries, p. 81.
„ „ Kiener, Iconog. (*Phasianella*), pl. v. fig. 1.
„ „ Forbes and Hanley, Brit. Moll., vol. ii. p. 538, pl. lxix. figs. 1–3 and pl. DD. fig. 5 (animal).
Turbo pullus, Wood, Ind. Test. (ed. Hanley), p. 150, pl. xxx. fig. 17 (*Phasianella*).
Phasianella pulla, Philippi, Conch. Cab. (ed. Küster), p. 11, sp. 12, pl. iii. figs. 15–20.
„ „ Reeve, Conch. Icon., vol. xiii. pl. v. fig. 14 and pl. vi. fig. 20.
Turbo pullus, Hanley, Ipsa Linn. Conch., pp. 327, 530 (*Phasianella*).
Phasianella pulla, Jeffreys, Mar. Test. Piedmont, Ann. and Mag. Nat. Hist., ser. 2, vol. xvii., 1856, p. 182.
„ „ Jeffreys, Brit. Conch., vol. iii. p. 338, pl. viii. fig. 1, and vol. v. p. 204, pl. lxiv. fig. 1.
„ „ Weinkauff, Conch. d. Mittelm., vol. ii. p. 342, sp. 1.
„ „ Jeffreys, Med. Moll., Ann. and Mag. Nat. Hist., ser. 4, vol. vi., 1870, p. 12 (separate impression).
„ „ Hidalgo, Moll. test. mar. Espagne, p. 134, No. 58.
„ „ Seguenza, Formaz. Terz. Calabria, pp. 269, 320, 355.
„ „ Monterosato, Enumeraz., p. 22.
„ „ Jeffreys, "Lightning" and "Porcupine" Exped., Proc. Zool. Soc. Lond., 1883, p. 109.

Station VIIIp. February 10, 1738. Lat. 28° 35′ N., long. 16° 5′ W. Tenerife. 78 fathoms. Volcanic sand.

Habitat.—From the Orkneys to the Canaries and the entire Mediterranean basin (Jeffreys).[1]

[1] Dr Gwyn Jeffreys refers this species to the West Indies on the authority of M. Petit de Saussaye, *Journ. de conch.*, vol. ii., 1851, p. 428, but the species was probably not well determined, as it does not appear in Dr Fischer's later catalogue of the same collection (M. le Commandant Beau's), published in the *Revue coloniale*, Paris, 1857, but is replaced by *Phasianella tessellata* (*sic*), C. B. Ad., *Phasianella zebrina*, D'Orb., and *Phasianella umbilicata*, D'Orb.

Fossil.—From the Middle Pliocene onwards (Seguenza).

Besides specimens as given above, the "Challenger" brought home shells of the genus from Station 113A, September 1, 1873, anchorage, Fernando Noronha, 7 to 25 fathoms, volcanic sand and gravel; from Station 122, September 10, 1873, lat. 9° 5′ S., long. 34° 50′ W., Pernambuco, 350 fathoms, red mud; from Simon's Bay, Cape of Good Hope, 15 to 20 fathoms, December 1873; from Torres Strait, 3 to 11 fathoms, September 7, 1874; from Flinder's Passage, 7 fathoms, September 8, 1874; from Station 186, Wednesday Island, Cape York, North-Eastern Australia, September 8, 1874; from Station 187, September 9, 1874, lat. 10° 36′ S., long. 141° 55′ E., near Cape York, 6 fathoms, coral sand; and from the reefs of Honolulu, July 1875, 40 fathoms. They are all quite young and small specimens, and indeterminable; and here I must observe that the characteristic features relied on for specific distinction are often quite untrustworthy in this most variable genus, and that I know no marks by which many of the species can be determined. Thus Dr Carpenter (Mazatlan Univalves, p. 224), having united *Phasianella tessellata*, Beck, *Phasianella minuta*, Anton, and *Phasianella zebrina*, D'Orb., from Jamaica, Cuba, and Guadaloupe, as the same species, and having suggested its identity with *Phasianella perforata*, Phil., from Payta and Mazatlan on the Pacific, and having referred to the identity of colouring which marks the entire group, mentions that in *Phasianella perforata* "the first whorl of the five is discoidal," and adds that the species "is characterised by extremely minute wrinkling over the whole surface, only discernible under the microscope when quite fresh," stating finally that "the umbilicus is very large when young and sharply keeled; when adult it is often nearly filled up by the callous labium." All of these are features which may be met with in specimens of *Phasianella pulla*, Linn., and cannot be made characteristic of species.

12. *Turbo*, Linne, 1758.

Species.

1. *Turbo petholatus*, Linne.
2. *Turbo smaragdus*, Martyn.
3. *Turbo transenna*, Wats.
4. *Turbo* (*Senectus*) *chrysostomus*, Linne.
5. *Turbo* (*Lunella*) *coronatus*, Gmelin.
6. *Turbo* (*Ninella*) *staminea*, Martyn.
7. *Turbo* (*Collonia*) *indutus*, Wats.
8. *Turbo* (*Calcar*) *henicus*, Wats.
9. *Turbo* (*Uvanilla*) *tentoriiformis*, Jonas.
10. *Turbo* (*Bolina*) *lapillus*, Reeve.

1. *Turbo petholatus*, Linne.

Turbo petholatus, Linne, Syst. Nat., 12th ed., p. 1233, No. 612.
Chemnitz, Conch. Cab., vol. v. p. 218, pl. clxxxiii. figs. 1826–35, and pl. clxxxiv. figs. 1836–39.
" " Lamarck, Anim. s. vert., vol. vii. p. 43, and (ed. Desh.) vol. ix. p. 192, sp. 12.
" " Dillwyn, Cat., vol. ii. p. 823, sp. 19.
" " Deshayes, Encyclop. méthod., vers. vol. iii. p. 1095, sp. 10.
" " Philippi in Conch. Cab. (ed. Küster), p. 7, sp. 3. pl. ii. figs. 1–10, and pl. iii. figs. 1–4.
" " Wood, Ind. Test. (ed. Hanley), p. 150, pl. xxx. fig. 18.
" " Reeve, Conch. Icon., vol. iv. pl. iii. fig. 12.
" " Hanley, Ipsa Linn. Conch., pp. 329, 530.

Turbo petholatus, Gould, U.S. Expl. Exped., p. 171, pl. xii. fig. 201.
" " M'Andrew, Red Sea Moll., Ann. and Mag. Nat. Hist., ser. 4, vol. vi., 1870, p. 15 (separate impression).
" " Fischer in Kiener's Iconog., p. 50, sp. 34, pl. xxiv. figs. 1, 1a, 1b, 1c.
" " Brazier, "Chevert" Shells, Proc. Linn. Soc. N. S. Wales, vol. ii., p. 23, No. 14.

September 28, 1875. Tahiti, Society Islands. 20 fathoms. Near the reefs.

Habitat.—Red Sea (M'Andrew), Andaman Islands, Singapore, Moluccas, Philippines, New Caledonia (Fischer).

Fossil.—In the Post-Pliocene of the Red Sea (Fischer).

This species is not given in Issel's Malacologia del Mar rosso, nor in von Marten's Indian Ocean List; but Dr Fischer mentions that it was found by Lefebvre in the post-tertiary deposits of Kosseir on the Red Sea, and alive in the same neighbourhood.

2. *Turbo smaradgus* (Martyn).

Limax smaragdus, Martyn, Univ. Conch., pl. ii. figs. 73, 74, and (ed. Chenu) pl. xxvi. figs. 1, 2.
" " Chemnitz, Conch. Cab., vol. v. p. 213, pl. clxxxii. figs. 1815, 1816.
Turbo smaragdus, Lamarck, Anim. s. vert., vol. vii. p. 45, and (ed. Desh.) vol. ix. p. 194, sp. 16.
" " Dillwyn, Cat., vol. ii. p. 825, sp. 23.
" " Deshayes, Encyclop. méthod., vers., vol. iii. p. 1096, sp. 13, pl. ccccxlviii. fig. 3.
" " Quoy and Gaimard, "Astrolabe" (Zool.), vol. iii. p. 219, pl. lx. figs. 6–8.
" " Gray in App. to Dieffenbach's New Zealand, vol. ii. p. 237, No. 68.
" " Philippi in Conch. Cab. (ed. Küster), p. 33, sp. 27, pl. viii. figs. 10, 11, and p. 67, pl. xvi. fig. 2.
" " Gray, Fig. of Moll. Anim., vol. i. pl. xxxviii. fig. 1 (animal).
" " Reeve, Conch. Icon., vol. iv. pl. iv. fig. 13.
" " Wood, Ind. Test. (ed. Hanley), p. 150, pl. xxx. fig. 22.
" " Adams, Genera, vol. i. p. 391, pl. xliii. fig. 1.
" " Hutton, Cat. Moll. New Zeal., p. 33, No. 139, and Manual, p. 90.
" " v. Martens, Crit. List Moll. New Zeal., p. 29.
" " Fischer in Kiener's Iconog., p. 29, sp. 18, pl. vi. fig. 2.

June 26, 1874. D'Urville Island, New Zealand. Beach.
July 1874. Kandavu, Fiji. Reefs.

Habitat.—New Zealand (Hutton).

This species does not seem to have been found elsewhere than in New Zealand, at least I have failed to find mention of it from any other locality, its extension to Fiji is therefore interesting.

3. *Turbo transenna*,[1] Watson (Pl. VI. fig. 12).

Turbo transenna, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 714.

Station 235. June 4, 1875. Lat. 34° 7′ N., long. 138° W. Japan. 565 fathoms. Green mud.

[1] So called from the grating-like sculpture.

Animal.—The colour is pale and uniform: the eyes are large and black, on short processes. There are no frontal lappets between the tentacles, and though the forehead is thickened there and transversely wrinkled, there is no veil. The usual fringed membrane extends backwards above the foot-edge to the front of the operculum, but bears no threads.

Shell.—Low, conical, round, with expanded base, sculptured, solid. *Sculpture:* The whole shell is cross-hatched by narrow, impressed, intersecting lines, which cross the whorls obliquely and not quite regularly nor uniformly, and which cut the surface into little diamonds resembling shagreen. *Colour* dirty rusty white. *Spire* rather low, but conical. *Whorls* of very rapid increase, apparently about 6. *Suture* linear, scarcely impressed. *Mouth* very oblique, round, nacreous to the very edge. *Outer lip* very slightly patulous, sharp on the edge, with a thick nacreous layer bevelled off to the edge above and in front, but on the base turned over and advancing in a rounded pad beyond the lip. *Pillar lip* consists of a rounded mass of nacre, backed and above obscured by a considerable porcellanous deposit, which is widely but thinly spread out over the body, so as to connect in a continuous sweep the outer and the pillar lips. It is distinctly impressed with the scale-like pattern of the underlying sculpture. Its edge is abrupt and chipped. *Operculum* thin, flat on the outside, highly porcellanous, with a translucent and slightly thinner central area; on the inside yellow, with many whorls, the nucleus nearly central, the suture well marked, and the last whorl less disproportionately large than usual. H. 0·87 in. B. 1·04, least 0·79. Penultimate whorl, 0·29. Mouth, height 0·75, breadth 0·65.

The sculpture of this species is very peculiar. In form the shell is not unlike a *Diloma*, or something between *Litorina saxatilis* and a *Natica*. In texture the shell is thinner than the thickened lip suggests. The measurements of the mouth are not satisfactory, the outer edge of the pillar-lip being indefinite; if they be taken within the opening, they would give it as more truly round. The apex is eroded; and the whole aspect of the shell is so weathered that but for the presence of the animal I should have taken it for an old and spoiled specimen.

4. *Turbo* (*Senectus*) *chrysostomus*, Linne.

Turbo chrysostomus, Linne, Syst. Nat., 12th ed., p. 1233, No. 614.
Chemnitz, Conch. Cab., vol. v. p. 178, pl. clxxviii. fig. 1766.
,, ,, Martyn, Univ. Conch., pl. xxvi.
,, ,, Lamarck, Anim. s. vert., vol. vii. p. 41, and (ed. Desh.) vol. ix. p. 189, sp. 7.
,, ,, Dillwyn, Cat., vol. ii. p. 825, sp. 24.
,, ,, Deshayes, Encyclop. méthod. vers., vol. iii. p. 1093, sp. 5.
,, ,, Wood, Ind. Test. (ed. Hanley), p. 150, pl. xxx. fig. 23.
,, ,, Reeve, Conch. Icon. vol. iv. pl. vii. fig. 28.
,, ,, Philippi in Conch. Cab. (ed. Küster), p. 12, sp. 6, pl. iv. fig. 5.

Turbo chrysostomus, Hanley, Ipsa Linn. Conch., pp. 330 and 531.
" " Fischer in Kiener's Iconog., p. 18, sp. 10, pl. iv. fig. 2.
" " v. Martens, Moll. Maurit., &c., p. 293.
" " Brazier, "Chevert," Shells, Proc. Linn. Soc. N. S. Wales, vol. ii. p. 23, No. 16.

July 21, 1864. Reefs off Tongatabu.

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ W. Inside the reef, Tongatabu. 18 fathoms. Coral mud.

July 29, 1874. Levuka, Fiji. 12 fathoms.

September 8, 1874. Flinders Passage, Torres Straits, N.E. Australia. 7 fathoms.

Habitat.—The whole Indian Ocean from Natal to the Nicobar Islands (v. Martens), Tongatabu, New Caledonia, Santa Cruz Achipelago, Philippines, Samoa Islands (Fischer.)

The shells which I have thus identified differ a good deal from one another. Those especially from Fiji are extremely abundant, and might perhaps be identified with *Turbo winteri*, Phil., *Turbo tumidulus*, Reeve, or some other of the many varieties of this very variable form, being high, narrow, and almost absolutely destitute of spinous processes. Judging by the British Museum specimens, they rather agree with *Turbo spinosus*, Chem., than with Linne's species. At the same time they exactly correspond to Dr Fischer's description of *Turbo chrysostomus*, var., "remarquable par son test, plus petit, plus étroit et plus allongé; l'intérieur de son ouverture est d'un jaune de soufre plutôt que doré. Dans cet état," he adds, "le *Turbo chrysostomus* a tous les caractères du *Turbo spinosus*, dont il ne diffère guère que par l'intérieur de d'ouverture teinte de jaune." It may further be observed, that not only is the longitudinal laminated sculpture identical in the two species, but the very fine spiral sculpture is so too.

In these circumstances, and disbelieving in the distinctness of the two species, so far as they are known to me, I have preferred the older name, confirmed in the choice further by the fact that the sculpture of the operculum is not granular, nor its colour "d'un blanc bleuâtre vers les bords et d'un brun pale vers sa partie centrale," as Fischer describes it in the case of *Turbo spinosus*, Chem., but is "striée partiellement et obliquement, et nuagée de roux, de blanc, de jaune et de vert," which he gives as characteristic of *Turbo chrysostomus*, Linne.

5. *Turbo* (*Lunella*) *coronatus*, Gmelin. (See Appendix, No. 2.)

6. *Turbo* (*Ninella*) *staminea* (Martyn).

Helix staminea, Martyn, Univ. Conch., pl. ii. fig. 71, and (ed. Chenu) pl. xxv. fig. 1.
Turbo torquatus, Gmelin, Syst. Nat., 13th ed., p. 3597, No. 106.
Chemnitz, Conch. Cab., vol. v. p. 187, vignette xliii. on p. 145, vol. x. p. 295, vignette xxiv. fig. A, B. p. 293.
" " Lamarck, Anim. s. vert., vol. vii. p. 40, and (ed. Desh.) vol. ix. p. 187, sp. 3.
" " Dillwyn, Cat., vol. ii. p. 849, No. 81.
" " Wood, Ind. Test. (ed. Hanley), p. 155, pl. xxxi. fig. 82.
" *lamellosus*, Broderip, Zool. Journ., vol. v. p. 331, supp. pl. xlix. fig. 2.
" *torquatus*, Quoy and Gaimard, "Astrolabe," vol. iii. (Zool.), p. 222, pl. lx. figs. 15–18.
" *staminea*, Gray in App. to Dieffenbach's New Zealand, vol. ii. p. 236, No. 67.

Turbo torquatus, Philippi, Conch. Cab. (ed. Küster), p. 39, sp. 33, pl. x. figs. 1–4.
„ *lamellosus*, Philippi, Conch. Cab. (ed. Küster), p. 69, sp. 63, pl. xvi. fig. 6.
„ *torquatus*, Reeve, Conch. Icon., vol. iv. pl. vi. fig. 25a, and fig. 26.
Ninella staminea, Adams, Genera, vol. i. p. 396, pl. xliv. fig. 1a, b, c.
„ „ Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 177, No. 134.
„ „ Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 213, No. 172.
Turbo torquatus, Fischer in Kiener's Iconog., p. 15, sp. 7, pl. iv. fig. 1.
„ *lamellosus*, Fischer (as = *Turbo torquatus*) in Kiener's Iconog., p. 16, sp. 8, pl. v. fig. 1.[1]
„ *stamineus*, v. Marten's Crit. List of New Zeal. Moll., p. 30.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—South Australia (Angas).

Mr Angas refers to this species as abundant in New Zealand as well as in New South Wales and South Australia generally, but v. Martens (*loc. cit.*) mentions that it is not found there. Gray (*loc. cit.*) merely quotes Martyn as authority for attributing it to New Zealand.

7. *Turbo* (*Collonia*) *indutus*, Watson (Pl. VI. fig. 1).

Turbo (*Collonia*) *indutus*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 715.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Small, conoidal, high, whorls tumid, base flattened; colour white, glossy. *Sculpture:* The whole substance of the shell is faintly marked with remote spiral threads, and the surface is very faintly scratched with closer microscopic striæ. The whorls are bluntly angulated in the middle, and the last is so besides at the base below the periphery; this angulation meets the outer lip. The second and third whorls have two or three strong spiral threads. Longitudinals—there are very many, close, unequal, very oblique, hair-like lines of growth; of these, the strongest rise in close-set, infrasutural puckerings, which on the third whorl resemble small beads. *Colour:* there is a glossy, thin, ivory-white calcareous coat over a brilliant pearly-white layer. *Epidermis:* on the one living specimen there is an excessively thin tenacious brown layer, which may possibly be only an accidental deposit. *Spire* high, fine-pointed. *Apex* blunt, the smooth, round, embryonic 1¼ whorl scarcely projecting. *Whorls* 6, of rapid increase, tumid, the penultimate especially rising swollen out of the suture; the base is a little flattened. *Suture* linear, not impressed, a little coarse, slightly marginated by the up-lap of the succeeding on the preceding whorl and the slight tumidity caused by the infrasutural puckerings. *Mouth* very oblique, round, with a soft pearly nacre all round. *Outer lip* very slightly descending, thick, bevelled outwards to a sharp edge. *Pillar-lip:* there is a broad, thin, hyaline pad spread over the body and connecting the outer lip and the pillar, which

[1] On the plate this is given as "*Turbo heteroclitus*, nobis."

is broad, thick, shallowly excavated, with a slight external median horizontal tooth or ridge; the edge is reverted and closely appressed. *Operculum*[1] small, thin, calcareous, flat, convex on the inside, where it shows $7\frac{1}{2}$ whorls; the last whorl close to its end begins suddenly to enlarge. *Teeth* distinctively those of the genus (see Troschel, Gebiss, &c., vol. ii. p. 213, pl. xx. fig. 7), there being endless rows of innumerable minute crooked uncini, with several (probably eleven) hooked and serrated central rasps, but in their confused dried-up condition it was impossible more minutely to identify them. H. 0·27 in. B. 0·25, least 0·23. Penultimate whorl, 0·09. Mouth, height 0·13, breadth 0·12.

Collonia marginata, Lam. (British Museum), in colour and form more than any other resembles this; but that is lirated, is rounded on the base, lacks the little tubercle in the middle of the flattened and expanded pillar, is toothed on the outer lip, and has not the angulation in the middle of the whorls.

It has been impossible for me to quote for this species Mr Dall, who, in the "Blake" Mollusca (Bull. Mus. Comp. Zool., Cambridge, U.S.A., 1881, vol. ix. p. 48) suggests the probability of his new species *Leptothyra albida* being the same as *Turbo* (*Collonia*) *induta*, Wats.; and still less can I quote Professor Verrill, who in his Mollusca of New England (Trans. Conn. Acad., vol. vi. pt. 1, May 1884, p. 197) asserts their identity. But in point of fact the two species have never been actually compared, and all that is certain is the identity of the Cape Hatteras (142 fathoms) species with Mr Dall's from the Gulf of Mexico and Havana (125 to 1002 fathoms).

Apart from this difficulty, however, is one connected with the genus *Leptothyra*, Carp., to which Mr Dall attributes his species. That is a genus very little known, but (*teste* Dall *loc. cit.*, p. 49) is characterised by a tooth on the pillar, and (*teste* Tryon, Struct. Conch., vol. ii. p. 312) by a corneous operculum, fixing its place as a *Trochus*. Now, the Challenger species has a calcareous operculum, and is a *Turbo*. But then, again, Mr Dall speaks of his species as having "the usual solid shelly operculum," and this remark (while opposed to the description of *Turbo* (*Collonia*) *induta*, Wats., whose operculum is small and thin) harmonises with Dr Carpenter's note regarding *Leptonyx sanguineus*, "Linn." (see Brit. Assoc. Report, 1863, Moll., West Coast America, p. 652, No. 269—that species as found in California, not in the Mediterranean, being, as I understand, the type of *Leptothyra*, Carp.), to the effect that the operculum has "horny and shelly layers." Being unable myself to reconcile all these points, I must be satisfied to call attention to them as needing elucidation.

As to the Challenger shell, it is of course obvious that the minute tooth or small tubercle on the middle of the exterior flattened pillar-lip, neither edge of which it reaches at all, is a feature distinguishing the shell from an ordinary *Collonia*, and would be more than enough in the opinion of many for the creation of a new genus, but one who regards such creations as a very great evil is compelled to avoid them wherever it is possible, and *Collonia* is too small a group to need breaking up.

[1] The solitary specimen of this operculum has been lost, it is believed, in the hands of the artist engaged on the shell.

7. *Turbo* (*Calcar*) *henicus*, Watson (Pl. VI. fig. 11).

Turbo (*Calcar*) *henicus*, Watson, Prelim. Report, pt. 4, Journ. Linn. Soc. Lond., vol. xiv. p. 713.

Station 173. July 24, 1874. Lat. 19° 9′ 35″ S., long. 179° 41′ 50″ E. Matuku, Fiji. 315 fathoms. Coral mud.

Shell.—Conical, high, scarcely coloured; whorls flattened, sculptured, with a spinose carina, below which the suture is deeply channelled. *Sculpture:* Spirals—below the suture is a flat shoulder, the edge of which is angulated and bordered by a row of largish, white separate beads; on the flat slope of the last whorl are six rows of smaller separate beads, the highest row being the largest; they are not connected by a thread, and the intervals between the rows are about half the breadth of the beads. At the periphery is a sharp, expressed, stellate carina, the sharp, hollow, compressed spines of which are about twelve in number. Below the carina the whorls are somewhat constricted, and the contour-line here is perpendicular; on it are four rows of fine beads. The edge of the base is sharply angled and defined by a second smaller, sharp, expressed carina, which meets the outer lip; it rises in from thirty to thirty-five vaulted scales, which toward the outer lip become like spines. On the flat base are ten very regular rows of separate beads, which are a little stronger toward the middle, and the outermost one of which tends to become scaly. The centre is occupied by a polished, slightly ridged, porcellanous pad. Longitudinals—below the suture and between the beads there are many irregular puckerings following the lines of growth. *Colour* a light yellowish ruddy tinge, the base paler than the upper part; the beads are white, and the porcellanous pad round the pillar is dead white, with more of translucency towards the centre; the pillar has a slight ruddy tinge. *Spire* high, perfectly conical. *Apex* round, the minute embryonic whorl being completely flattened down. *Whorls* 7 to 8, of very regular increase, flattened and angulated. The first three whorls are only radiatingly ribbed. On the fourth the highest row of beads begins, on the fifth the supracarinal row appears, and only on the sixth does the intermediate space become covered with the sculpture already described; previous to this the whorls have a nacreous gleam. *Suture*, itself linear, it is marginated by the up-lap of the inferior whorl which covers the basal carina, and is very strongly channelled by the square contraction of the superior whorl beneath the stellate carina. *Mouth* oblique, round, angulated at the basal carina, with an exquisite soft pearly nacre within. *Outer lip* sharp, thin, with a broad porcellanous edge, and within this a broad flat nacreous callus; it is flat on the base. *Pillar-lip;* a broadly expanded porcellanous pad rises in the middle of the base, coils round the pillar with a slightly swollen outer edge, and advances in front into a blunt round tooth. The edge of the lip is a broad, round, slightly ruddy pillar of nacre, which unites itself with the labral callus. *Operculum*, oval, rounded on the outer and straightish on the pillar contour, thick, with steep straight edges, and a very slight flange on its outer lower margin; its outer surface is white, tubercled, rounded; its inner surface

is flat, brown, lineated, with one large and very many minute whorls. H. 0·82 in. B. 1·0, least 0·81. Penultimate whorl, 0·22. Mouth, height 0·36, breadth 0·39.

Perhaps *Turbo (Calcar) armatum*, Phil., most closely resembles this species, which is, however, very distinct and much more beautiful. Strictly speaking, it belongs to none of the *Calcar* or *Astralium* groups, but touches several of these. The operculum is unlike that of *Stella*, of *Uvanilla*, or of *Pomaulax*. The form of the shell is unlike *Pachypoma*, and neither shell nor operculum suit *Lithopoma*, *Imperator*, *Tubicanthus*, &c.

8. *Turbo* (*Uvanilla*) *tentoriiformis* (Jonas).

Trochus tentoriiformis, Jonas in Menke's Zeitschr. f. Malak., 1845, p. 66.
„ *fimbriatus*, var. Quoy and Gaimard, "Astrolabe" (Zool.), vol. iii. p. 229, pl. lxi. fig. 9 (but not the other figures).
„ *tentoriiformis*, Philippi in Conch. Cab. (ed. Küster), p. 116, sp. 132, pl. xx. fig. 1.
„ *Urvillei*, Philippi in Conch. Cab. (ed. Küster), p. 215, sp. 267, pl. xxxii. fig. 4.
„ *tentoriiformis*, Reeve, Conch. Icon., vol. xiii. pl. viii. fig. 43.
„ *Urvillei*, Reeve, Conch. Icon., vol. xiii. pl. viii. fig. 46.
Uvanilla tentoriiformis, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 214, No. 173.
Calcar tentoriiforme, Fischer in Kiener's Iconog. Gen. *Trochus*, p. 41, sp. 29, pl. xxxi. fig. 2, and pl. lxxix. fig. 2.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Port Jackson (Angas).

The operculum in this species does not agree with Adams' figure and Gray's description not having "distinct convex radiating ribs," but only two slight ridges nearly at right angles, the rest of the surface being almost flat. Gray further describes his genus *Uvanilla* as having "marginal spines," a feature which Adams softens into "whorls . . . fimbriated." They are neither in this case.

9. *Turbo* (*Bolina* [1]) *lapillus*, Reeve.

Trochus lapillus, Reeve, Conch. Icon., vol. xiii. p. xi. fig. 65.

July 29, 1874.—Levuka, Fiji. 12 fathoms.

Habitat.—"?"—Reeve.

There are two specimens of this species in the British Museum, which differ from one another in the number of spirals on the base, and have only a faint tinge of purple at the pillar. In the two Challenger specimens, the scaly spirals are much fewer, and a brilliant crimson streak to the left

[1] Risso's name is here given as he spells it. Gray's reference to it would have been unrecognisable under the form "Bolma" he adopted, had he not expressly referred to Risso in the List of the Genera of Recent Mollusca, &c., Proc. Zool. Soc. Lond., 1847, p. 144. See also Gray's Figs. of Moll., vol. iv. p. 144, No. 115.

of the pillar, and also in front of it on the left corner of the basal mouth lip, is a marked feature. I observe, however, that, as is often the case with these brilliant colours, the crimson has somewhat faded during the years the shell has been in my hands. This may account for its absence in the British Museum specimens.

Family NERITACEA, Lamarck, 1809.

Genus *Nerita*, Linne, 1758.

Species.

1. *Nerita albicilla*, Linne.
2. *Nerita ascensionis*, Gmelin.
3. *Nerita chamæleon*, Linne.
4. *Nerita punctata*, Quoy and Gaimard.
5. *Nerita tessellata*, Gmelin.

1. *Nerita albicilla*, Linne. (See Appendix, No. 3.)

2. *Nerita ascensionis*, Gmelin.

Nerita ascensionis, Gmelin, p. 3683, No. 55.
" " Chemnitz, Conch. Cab., vol. v. p. 297, pl. cxci. figs. 1956–57.
" " Lamarck, Anim. s. vert., vol. vi. (2) p. 193, and (ed. Desh.), vol. viii. p. 607, No. 11.
" " Dillwyn, Cat., vol. ii. p. 1000, No. 50.
" " Deshayes, Encyclop. méthod., vers. vol. iii. p. 618, sp. 6.
" " Quoy and Gaimard, "Astrolabe" Zool., vol. iii. pl. lxv. figs. 19–22.
" " Wood, Ind. Test., p. 180, pl. xxxvi. fig. 52.
" " Reeve, Conch. Icon., vol. ix. pl. iii. fig. 14.
" " Sowerby, Thes. Conch., pts. 39 and 40, p. 116, sp. 64, (iv. *Gen.*) pl. ccccIxvi. fig. 72.

September 1, 1873. St Michael's Rock, Fernando-Noronha, shore.

Habitat.—Island of Ascension.

This is *Nerita diversicolor*, Martyn fide Mörch, and *Nerita chlorostoma*, Lamarck fide Recluz (see Hanley in Wood's Index, *loc. cit. supra*).

3. *Nerita chamæleon*, Linne. (See Appendix, No. 4.)

4. *Nerita punctata*, Quoy and Gaimard.

Nerita punctata, Quoy and Gaimard, "Astrolabe" (Zool.), vol. iii. p. 185, pl. lxv. figs. 41, 42.
" *atrata*, Reeve, Conch. Icon., vol. ix. pl. iv. fig. 16.
" " Hutton, Marine Moll. New Zealand, p. 33, No. 138.
" " Hutton, Manual New Zealand Moll., p. 89.
" *punctata?* v. Martens, Crit. List Moll. New Zealand, p. 29.
" *atrata*, Angas, South Australian Moll., Proc. Zool. Soc. Lond., 1865, p. 175, No. 123.
" " Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 212, No. 165.
" " Sowerby, Thes. Conch., pts. 39 and 40, p. 110, sp. 31, pl. ccccIxv. (iii. *Gen.*) fig. 41.
" *punctata*, v. Martens, Moll. Mauritius, &c., p. 291.
" *melanotragus*, E. A. Smith, "Alert" Collections, p. 69, No. 82.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—New Holland (Quoy and Gaimard), New Zealand (Hutton), Port Jackson and all Southern Australia (Angas), Seychelles, Amirante Islands, Mauritius (v. Martens).

Deshayes is responsible for at least some part of the confusion which has gathered round this species. In his edition of Lamarck, vol. viii. p. 603, note to *Nerita atrata*, Chem., an Atlantic species, he says that this is the species to which Quoy and Gaimard, "Astrolabe," vol. iii. pl. lxv. figs. 41, 42, gave the name of *Nerita punctulata (sic)*. But there is no such species in Quoy and Gaimard, and the *Nerita punctata*, to which he meant to refer, they distinctly say is a species from New Holland. The species in the British Museum, with which the Challenger specimen agrees, is marked *Nerita atrata*, Chem., but on the back "*N. punctata*, Quoy and G., voy. 'Astrol.,' t. 65, f. 41," and this is obviously the name which it should bear. Chemnitz evidently had this species before him as well as that from the Atlantic (which he describes), for he says (vol. v. p. 296) he had seen a black Nerita from the South Seas procured in one of Cook's voyages; and in the points he enumerates, both of resemblance and of difference, he makes it obvious that this of Quoy and Gaimard is the species he had in view. Grey in his Fauna of New Zealand (Diffenbach's Travels, vol. ii. p. 240, No. 96) has somewhat added to the confusion by referring to a *Nerita nigra*, Quoy and Gaimard, and by quoting Quoy as his authority for ascribing it to New Zealand; but no such species of Quoy and Gaimard exists, only in the "Voyage de l'Uranie" (Zool., p. 460) mention is made of a *Nérite noirâtre* of unknown locality. All this has been already shown by von Martens (Crit. Reg., *loc. cit. supra*), but has not checked the repetition of the mistake of identifying the New Zealand species with that from the Atlantic, but the reason for this may have been that Professor v. Martens closes his remarks without plainly saying what that species should be called, which he had so clearly proved could not be *Nerita atrata*, Chem. In his Mollusca of Mauritius, &c., he marks *Nerita punctata*, Quoy, as "nicht weiter verbreitet" than the Mascarene group of islands—a statement I do not understand in the face of his "Critical List" as above. Perhaps he had come to doubt his identification of *Nerita punctata*, Quoy, with that from Australia. Altogether, I suspect that Mr Smith's solution of the difficulties, by introducing for our species a quite new name, is the best. Still, the points of divergence in Quoy and Gaimard's description on which Mr Smith dwells hardly outweigh the evidence supplied by the locality to which they ascribe their species.

5. *Nerita tessellata*, Gmelin.

Nerita tessellata, Gmelin, p. 3685, No. 65.
„ *striata*, Chemnitz, Conch. Cab., vol. v. p. 313, pl. cxcii. figs. 1998–99.
„ *tessellata*, Lamarck, Anim. s. vert., vol. vi. p. 194, and (ed. Desh.) vol. viii. p. 609, sp. 16.
„ „ Dillwyn, vol. ii. p. 1006, sp. 65.
„ „ Deshayes, Encyclop. méthod. vers., vol. iii. p. 617, sp. 3.
„ „ Reeve, Conch. Icon., vol. ix. pl. ix. fig. 43.
„ „ Wood, Ind. Test., p. 182, pl. xxxvi. fig. 68.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—West Indies (Chemnitz).

I do not know the Nerita from Senegambia which passes under this name, and I have excluded Adanson's le Tadin, p. 190, pl. xiii. fig. 2, from the references, because, though from his quotation for his species of Petiver *Nerita jamaicensis*, Gazophyl., vol. i. p. 581, pl. xiii. fig. 12, it is evident

that he identified the Tadin with the West Indian species, his description is utterly inapplicable to this of Gmelin. He says that the last whorl "est relevée de quinze canelures," and his figure evidently multiplies these still more, whereas Gmelin's species has nothing like that number of ridges and furrows. The other authorities I have quoted as I find them, not being in circumstances adequately to control them. Sowerby, Thes. Conch., pts. 39 and 40, p. 109, sp. 27, pl. cccclxvii. (v. *Gen.*) figs. 86–89, certainly presents the African species.

Family IANTHINIDÆ, D'Orbigny, 1839.

Genus *Ianthina*, Lamarck, 1792.

Species.

1. *Ianthina exigua*, Lamarck. 2. *Ianthina rotundata*, Leach.

1. *Ianthina exigua*, Lamarck.

Ianthina exigua, Lamarck, Anim. s. vert., vol. vi. pt. 2, p. 206 (ed. Desh.), vol. ix. p. 5, No. 2.
Janthina „ Deshayes, Encyclop. méthod., vers., text, vol. ii. p. 325, sp. 2; and plates, vol. iii. pl. cccclvi. fig. 2.
Ianthina „ Sowerby, Genera, vol. ii. pl. cxci. f. 2.
„ „ D'Orbigny, Amérique mérid., vol. v. p. 414, No. 318.
„ „ D'Orbigny, Cuba, vol. ii. p. 84, No. 260.
„ „ Conch. Cab. (ed. Küster), p. 7, pl. ii. figs. 6, 7.
„ „ Reeve, Conch. Icon., vol. xi. pl. v. fig. 21.
„ „ Monterosato, Enumerazione, p. 35.
„ „ Hutton, Manual New Zealand Moll., p. 71.
„ „ Sowerby, Thes. Conch., pt. 38, p. 51, pl. cccxliv. (ii. *Gen.*) figs. 23, 24.

Station 70. June 26, 1873. Lat. 38° 25′ N., long. 35° 50′ W. West of Azores. 1675 fathoms. Globigerina ooze.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of Azores. 1000 fathoms. Pteropod ooze.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 fathoms. Volcanic mud.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. San Miguel, Azores. 1000 fathoms. Volcanic mud.

Station 120. September 9, 1873. Lat. 8° 37′ S., long. 34° 28′ W. Off Pernambuco. 675 fathoms. Red mud.

Habitat.—North and South Atlantic. Mediterranean to New Zealand.

2. *Ianthina rotundata*, Leach.

Ianthina rotundata, Leach (MS.), in Dillwyn's Contrib. to Hist. Swansea, 1840, p. 59.
„ *communis*, Forbes and Hanley, Brit. Moll., vol. ii. p. 549, pl. lxix. figs. 6, 7, and pl. cxxxiii. fig. 1.
„ *rotundata*, J. Gwyn Jeffreys, Brit. Conch., vol. iv. p. 186, frontispiece, and pl. iii. fig. 1, and vol. v. pl. lxxvii. fig. 1.

Ianthina rotundata, Küster, Conch. Cab. (ed. Küster), p. 4, pl. i. figs. 1, 2.
" " Monterosato, Enumerazione, p. 35.
" *communis*, Sowerby, Thes. Conch., pt. 38, p. 50, sp. 3, pl. ccccxliii. (i. *Gen.*) figs. 7, 8.

June 20, 1873. Lat. 35° 35′ N., long. 50° 27′ W. Surface.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of Azores. 1000 fathoms. Pteropod ooze.

Station 133. October 11, 1873. Lat. 35° 41′ S., long. 20° 55′ W. Mid-Atlantic. 1900 fathoms. Globigerina ooze.

Habitat.—Great Britain, France (Jeffreys), Azores (Drouet), Madeira (my dredgings), Canaries (M'Andrews), Mediterranean (Monterosato).

I avoid other quotations of interest, such as Lischke (Conch. Japan, vol. iii. p. 52, *Ianthina fragilis*, Lam.), and Krauss (Südafr. Moll., p. 92, *Ianthina communis*), the citation of which would involve a discussion of the synonymy and species of this genus, on which I am not called upon to enter.

Family Solariidæ, Chenu, 1859.

This family was first differentiated by Gray (see Mrs Gray's figures, vol. iv. pt. 2; Dr Gray's Systematic Arrangement, 1850, p. 79, fam. 13) under the name *Architectomidæ*. The Messrs Adams (Genera, vol. i. p. 241) correct this word to *Architectonicidæ*, without reference to Gray. Chenu in 1859 set aside Gray's name in favour of *Solariidæ* (see Manuel, vol. iii. p. 232), but without assigning any reason for the change. Deshayes in 1864 (Animaux sans vertèbres du bassin de Paris, vol. ii. p. 65), without mention of Chenu, substituted *Solariadæ* for Gray's name, supporting the change by reasons which, though a little overpressed, are unanswerable. It is somewhat singular that Keferstein in 1866 (see Bronn's Thier-Reich, vol. iii.; Weichthiere, p. 1052), and Weinkauff in 1868 (Moll. des Mittelmeeres, vol. ii. p. 260), both seem either to have been unaware of the author of the name of the family or to have claimed it as their own.

Genera. 1. *Solarium*, Lamarck. 2. *Bifrontia*, Deshayes. 3. *Trashysma*, G. O. Sars.

1. *Solarium*, Lamarck, 1799.

Species.

1. *Solarium* (*Architectonica*) *perspectivum*, Linne. 2. *Solarium* (*Architectonica*) *reevei*, Hanley. 3. *Solarium* (*Torinia*) *rosulentum*, Wats.

1. *Solarium* (*Architectonica*) *perspectivum* (Linne).

Trochus perspectivus, Linne, Syst. Nat., 10th ed., p. 757, and 12th ed. p. 1227, No. 581, in part.
" " Chemnitz, Conch. Cab., vol. v. p. 121, pl. clxxii. fig. 1693 (figs. 1691, 1692, 1694–96, *exclusis*) [vol. xi. p. 162, pl. cxcvi. figs. 1884–85, represents *Solarium maximum*, Phil., f. Hanley.]
Solarium formosum, Hinds, Proc. Zool. Soc. Lond., 1844, p. 22, sp. 1.
" *zonatum*, Philippi, Zeitschr. f. Malak., 1848, p. 173, sp. 54.
australe, Philippi, Zeitschr. f. Malak., 1848, p. 168, No. 44.

Solarium australe, Philippi, Conch. Cab. (ed. Küster), p. 29, sp. 32, pl. iv. fig. 8.
„ *incisum*, Philippi, Zeitschr. f. Malak., 1848, p. 169, No. 45.
„ „ Philippi, Conch. Cab. (ed. Küster), p. 27, pl. iv. fig. 6.
„ *perspectivum*, Hanley, Ipsa Linn. Conch., pp. 314 and 527.
„ (*Architectonica*) *perspectivum*, Hanley in Sowerby, Thes. Conch., pt. 22, p. 228, sp. 1, pl. cclii. (iv. *Gen.*) figs. 36–38.
„ *striatum*, Eydoux and Souleyet, "Bonite," Zool., vol. ii. p. 587, pl. xxxvii. figs. 10–14 (see Brit. Mus. List., p. 23, No. 180).
„ „ Gray, Fig. Moll., vol. ii. pl. cxxvi*a*. fig. 2, vol. iv. p. 28, No. 2.
„ (*Architectonica*) *perspectivum*, Adams, Genera, vol. i. p. 242, vol. iii. pl. xxv. fig. 6, *a*, *b*.
„ „ „ Reeve, Conch. Icon., vol. xv. pl. ii. fig. 11.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Off Malanipa, Basilan Strait, Philippines. 10 to 20 fathoms. Sand.

Habitat.—Amboyna (typical), Australia (var.)

In the view I have taken of this species and of the authorities quoted, I have, of course, followed Hanley (Thes. Conch., *loc. cit.*) He really brought chaos into order here. In rejecting, however, Lamarck's identification of this species, he seems somewhat to overpress the words he quotes, the more so that Lamarck's words are almost a quotation from Linne, so that the two authors may fairly be regarded as having had the same species in view. The *Solarium perspectivum* quoted by von Martens, Moll. Mauritius, &c., p. 290, is not this species, but that of Sowerby, Gen., vol. ii. pl. ccii. f. 1, and of Kiener, f. 1, and of Philippi, Zeitschr. f. Malak., &c., 1848, p. 170 = *Solarium trochleare*, Hinds, Proc. Zool. Soc. Lond., 1844, p. 25. (See Philippi in Küster's Conch. Cab., p. 3.)

2. *Solarium* (*Architectonica*) *reevei*, Hanley.

Solarium (*Architectonica*) *reevei*, Hanley, Proc. Zool. Soc. Lond., 1862, p. 204.
„ „ „ Hanley, in Sow. Thes. Conch., pt. 22, p. 234, sp. 16, pl. ccl. (i. *Gen.*) figs. 9, 10.
„ „ „ Reeve, Conch. Icon., vol. xv. pl. iii. fig. 20.
„ „ „ Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 201, No. 93.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Port Jackson, deep water (Angas).

3. *Solarium* (*Torinia*) *rosulentum*, Watson (Pl. VIII. fig. 12).

Solarium (*Torinia*) *rosulentum*, Watson, Prelim. Report, part 15, Journ. Linn. Soc. Lond., vol. xvi. p. 610.

Station 163B. June 3, 1873. Lat. 33° 51′ 15″ S., long. 151° 22′ 15″ E. Off Port Jackson. 35 fathoms. Hard ground. Bottom temperature 63° F.

Shell smallish, ruddy yellow, with bright crimson spots, flat, with a slightly raised, conical and scalar spire, rounded carinated whorls, and a large, open, pervious umbilicus defined by a sharp thread and rayed with sharp diverging lamellæ. *Sculpture:* Longitudinals—the surface of the shell is beset with small, close, procumbent lamellæ; these,

below the suture and in the umbilicus, are much rarer and more prominent than elsewhere. Spirals—there are sharpish rounded spiral threads on all the whorls, those on the earlier whorls are three or four, and are subequal; on the last there are above the periphery about four larger, with smaller ones between, while on the base they are numerous, both without and within the umbilicus; one in particular in the middle of the base is strong, and another, within the funnel, is nearly as much so; these spirals are faintly crossed by the longitudinal lamellæ; but within the umbilicus the lamellæ form minute spines or tubercles on the crests of the spirals. *Colour* a cindery yellow with a ruddy tinge, and flecked above, especially on the highest spiral, with brilliant little crimson spots;[1] the upper part of the spire is bright yellow, the apex pale. *Spire* depressed, conical, scalar. *Apex* rounded, polished, the tip scarcely prominent; the embryonic tip seems, as usual, introverted. *Whorls* 5, of very gradual and regular increase, with a flat, horizontal or slightly sunken shoulder below the suture. *Suture* distinct, being angulated and a very little impressed. *Mouth* round, very oblique, small. *Outer lip* thin, very slightly patulous, with a very feeble white callus within. *Inner lip* has a very short attachment to the body, is rounded, and a little patulous. H. 0·16 in. B. 0·24. Penultimate whorl, breadth 0·05. Mouth, height 0·09, breadth 0·09.

This very pretty little species is not like any other I know, and rather recalls in form some of the *Solariella* group of *Trochus;* but the mouth, inner lip, texture of shell, and apex are unmistakably those of *Solarium*. There are in this specimen, on the last whorl especially, some minute stumpy setæ, which are probably embryonic seaweed. They are too irregularly arranged to make it likely they should be traces of any epidermis.

2. *Bifrontia*,[2] Deshayes, 1833.

Bifrontia (?) *pernambucensis*, n. sp. (Pl. VIII. fig. 13).

Station 122. September 10, 1873. Lat. 9° 5′ N., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Small, discoidal, white, polished, ribbed, and spiralled, with a depressed spire, a mamillated apex, an impressed suture, a disjoined and slightly quadrangular mouth, and a wide open, scarcely impressed umbilicus. *Sculpture:* The last two whorls are obliquely girt round with about twenty thin, small, slightly procumbent, distant lamellæ, between which are slight striæ. Spirals—there are small, feeble, rounded threads and

[1] These suggested the name.

[2] Deshayes in 1832 at first proposed (Encyclop. méthod., vol. iii. p. 659) for this genus the name of *Omalaxis* (not *Omalalaxis*, see Hermannsen Index Gen. Malak. Prim., vol. ii. p. 144), which is neither Greek nor Latin, nor even a mixture of the two. In 1833 he himself (Coq. Foss. Par., vol. ii. p. 222) substituted for this hybrid *Bifrontia*, which has been largely accepted, the more so that the change to *Homolaxon*, proposed by Agassiz (Nomenclator *sub voce*), is complicated by a slip of the pen, and *Homalaxis*, which has been suggested, is no escape from the essential wrongness of the original word, which were best allowed to lapse.

furrows, which are most distinct round the periphery. *Colour* hyaline to porcellanous, lustrous. *Spire*—each whorl is a little below the level of the one which follows; but the *Apex*, which is mamillate, small, and glossy, rises distinct in the middle and is not introverted (as in *Bifrontia zanclea*, Phil.) *Whorls* nearly four, convex, small; they are contiguous, except the last, which towards the mouth is separated from the one which it lies beside. *Suture* well impressed. *Mouth* small, round, but with a slight tendency to angularity. *Lip* thin, rather patulous on the inner side. *Umbilicus* includes the whole shell, and exposes all the whorls; it is a good deal more impressed than the upper side of the shell. H. 0·042 in. B. 0·097. Mouth, height 0·042, breadth 0·039.

It is possible this shell may be a *Bifrontia*, as I have named it, but I do not believe it to be so. Still less, however, do I think it a *Serpularia*, and I do not know what else to call it. So till something more is known of the shell and of the animal than I have learned from the three Challenger specimens, I think it safest to class it as I have done.

3. *Trachysma*, G. O. Sars, 1878.

Trachysma delicatum (Philippi).

Cyclostoma? delicatum, Philippi, Enum. Moll. Sicil., vol. ii. p. 222, pl. xxviii. fig. 3.
Trachysma „ G. O. Sars, Moll. Arct. Norv., p. 212, No. 125, pl. xxii. figs. 17, 18.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 fathoms. Volcanic mud.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. San Miguel, Azores, 1000 fathoms. Volcanic mud.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Pernambuco. 350 fathoms. Red mud.

Habitat.—Mediterranean (Philippi) and North Atlantic (Sars).

This species was got by the "Porcupine" expedition in the North Atlantic. The generic name is a MS. one of Dr J. Gwyn Jeffreys, but was first published by Sars.

Family Scalariidæ, Broderip, 1839.

Genera. 1. *Scalaria*, Lamarck. 2. *Crossea*, A. Adams.

1. *Scalaria*, Lamarck, 1801.

Species.

1. *Scalaria aculeata*, Sow.
2. *Scalaria jukesiana*, Forb.
3. *Scalaria tortilis*, Wats.
4. *Scalaria acus*, Wats.
5. *Scalaria funiculata*, Wats.
6. *Scalaria vermetiformis*, n. sp.
7. *Scalaria philtata*, n. sp.
8. *Scalaria* (*Cirsotrema*) *hellenica*, Forb.
9. *Scalaria* (*Cirsotrema*) *dentiscalpium*, Wats.
10. *Scalaria* (*Acirsa*) *subdecussata*, Cant.
11. *Scalaria* (*Acirsa*) *pyrrhias*, n. sp.

1. *Scalaria aculeata*, Sowerby.

Scalaria aculeata, Sowerby, Proc. Zool. Soc. Lond., 1844, p. 12.
" " Sowerby, Thes. Conch., vol. i. pt. 4, p. 86, sp. 13, pl. xxxii. figs. 35–37.
" " Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 168, No. 77.
" " Reeve, Conch. Icon., vol. xix. pl. vii. fig. 46.
" " Nyst, Tableau du genre Scalaria, 1871, p. 14, No. 5.
" " Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 250.

April 26, 1874. Port Jackson, Sydney. 6 to 15 fathoms.

Habitat.—Malacca and Philippines (Sowerby), St Vincent's Gulf, South Australia (Angas), Hong-Kong, China (Nyst), Torres Straits 20 fathoms and Papua 70 fathoms (Brazier).

This is a very variable species both as regards the strength of the shell and the number of ribs on the whorls.

2. *Scalaria jukesiana*, Forbes.

Scalaria jukesiana, E. Forbes, Appen. to Voy. "Rattlesnake," p. 383, pl. iii. fig. 7.
" " G. F. Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 200, No. 80.
" " Nyst, Tableau du genre Scalaria, 1871, p. 41, No. 165.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Port Jackson.

Mr E. A. Smith agrees with me in considering this species as that of Forbes, though the Challenger specimen is hardly full-grown, is a little narrower, and is somewhat rubbed.

3. *Scalaria tortilis*, Watson (Pl. IX. fig. 1).

Scalaria tortilis, Watson, Prelim. Report, pt. 15, Journ. Linn. Soc. Lond., vol. xvi. p. 607.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Very long, with numerous small rounded whorls, broadish, rounded distant ribs, and close spiral threads, an impressed suture, and a broad, square, smooth base, defined by a strong spiral thread. *Sculpture:* Longitudinals—There are on each whorl 14 rather remote rounded ribs; they slightly diminish in number and remoteness up the spire; they cross the whorls with a very slight trend but straight course toward the right; they do not extend to the base, which is quite plain but for slight hair-like lines of growth. Spirals—there are on each whorl about 9 or 10 close-set, very little raised threads, parted by minute furrows; that defining the base is strong, and can be traced just above the

suture up the spire. *Colour* white. *Spire* high and narrow, conical. *Apex* broken. *Whorls*—10 at least remain below the embryonic shell; they are well rounded, and of very slow increase both in height and in breadth. *Suture* deeply impressed by the curve of the whorls; it is linear, and has both above and below it a minute flat border. *Mouth* broken, but apparently very round and oblique, a little angulated at the basal keel. *Inner lip* inconsiderable, very thin on the body, slightly reverted on the pillar. H. 0·42 in. B. 0·1. Penultimate whorl, height 0·06. Mouth, height 0·07, breadth 0·07.

This species has some resemblance to *Scalaria varicosa* (S. Wood ?), G. O. Sars, but is much narrower, with smaller and more numerous whorls; and the base is much squarer, and is not contracted. It extremely resembles *Cerithiopsis costulata*, Möll., but is a larger shell, and under a superficial resemblance the whole sculpture, both longitudinal and spiral, is quite different.

4. *Scalaria acus*, Wats. (Pl. IX. fig. 2).

Scalaria acus, Watson, Prelim. Report, pt. 15, Journ. Linn. Soc. Lond., 1883, vol. xvi. p. 608, sp. 3.
" " Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1884, p. 139, sp. 15.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of Azores. 1000 fathoms. Pteropod ooze. Bottom temperature 39·4° F.

Habitat.—North Atlantic, from 49 to 1254 fathoms (Jeffreys).

Shell.—Small, compact, long, sharp, solidly ribbed, deeply sutured, with faint spiral markings, and on the rounded base a strong thread. *Sculpture:* Longitudinals—there are on the last whorl about 17, and on the first regular whorl about 15, strong, raised, rounded ribs, which cross from suture to suture in the line of the axis, and extend, though less strongly, to the base. Spirals—between the ribs there are traces of feeble striæ; on the last whorl there is one sharpish thread, which comes out exactly at the upper corner of the mouth, and encircles the base. *Colour* ivory-white. *Spire* high, narrow, conical. *Apex* consists of three brownish-yellow, glossy, broad, cylindrical whorls, of which the first is very short and rounded, the second short and slightly conical, and the third high and cylindrical; they have very fine, microscopic, hardly raised, flexuous, longitudinal threads, and still finer spirals. *Whorls* 12 in all, very much constricted at the suture both above and below, and somewhat flattened in the middle; after the apex they are of very slow and regular increase; the last is smallish, with a rounded base, within the contraction of which lies the basal thread. *Suture* wide and deeply impressed, oblique. *Mouth* broken. H. 0·22 in. B. 0·06. Penultimate whorl, height 0·037. Mouth, height 0·044, breadth 0·04.

I am indebted to Dr Gwyn Jeffreys for calling my attention to the spiral striæ on this species. I had described the shell originally on a dull day, when these striæ were invisible. In a good light they are obvious. Dr Jeffreys refers to the species as a fossil found by the Marquis of Monterosato in the Pliocene of Ficarazzi, near Palermo; but I am unable to recognise the species in the Marquis's list.

5. *Scalaria funiculata*, Watson (Pl. IX. fig. 4).

Scalaria funiculata, Watson, Prelim. Report, pt. 15, Journ. Linn. Soc. Lond., vol. xvi. p. 609.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Small, rather stumpy, with strongish pinched-out ribs, and compact crimped spirals; the base is broad, flat, and encircled with a strong spiral thread. *Sculpture:* Longitudinals—on the last whorl there are about 10, on the earlier whorls 11 or 12 strongish ribs, which have broad bases and narrow crests; they run very straight down the spire, but have each a minute twist to the right at the top, and almost inappreciably to the left at the bottom of the whorls; they do not extend to the base. Spirals—the whole surface is covered with small, flattened, close-set threads, only separated by extremely minute scratches; these threads are finely crimped, which gives them the rope-like appearance under the microscope from which the name of the species is derived. *Colour* darkish. *Spire* high, conical, with a broadish base. *Apex* broken. *Whorls*—8 to 9 remain; they are regularly convex; the last is broadish, short, with a broad square flat base defined by a strongish thread round the outside. *Suture* narrow, impressed, rather oblique. *Mouth* perfectly round. *Outer lip* prominent beyond the last rib, rounded, blunt. *Inner lip* very short on the body, which it crosses with a small shelf, of which there are traces all round the mouth within the outer edge. H. 0·23 in. B. 0·085. Penultimate whorl, height 0·037. Mouth, height 0·04, breadth 0·04.

I have an unpublished *Scalaria* of my own dredging at Madeira, which extremely resembles this species, but is distinct. It is narrower, the crimping of the spirals is finer, the longitudinal ribs extend to the base, which is rounded, and has the basal thread much more within the contraction of the basal rounding than is the case here.

It is obvious that there is a close connection between this species and the *Scalaria longissima*, Seg., an undescribed species figured by Dr Gwyn Jeffreys in the Proc. Zool. Soc. Lond., 1884 (p. 132), pl. x. fig. 3, and of both with *Turbo torulosus*, Brocchi, Conch. Top. Subapp., 2d ed., vol. ii. p. 163, pl. vii. fig. 4; but I am not acquainted with either of these species and cannot compare them; judging by the figures, however, they are not the same.

6. *Scalaria vermetiformis*, n. sp. (Pl. IX. fig. 6).

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Rather small, short, thin, with few much disunited whorls, which are crossed by fine thin lamellæ, and are spirally scored; the apex is small, dark, united, and longitudinally ribbed; the mouth is small, oval, and sharp-edged. *Sculpture:* Longitudinals—the whorls are crossed by a great many fine sinuous lamellæ, which are not recumbent. Spirals—there are on the whole surface very many fine rounded threads, parted by flat intervals of double their breadth; these threads are just traceable on the longitudinal lamellæ. *Colour* transparent white, not glossy. *Spire* rather short, conical. *Apex* consists of four turbinately conical, brown, rounded, closely and finely longitudinally ribbed whorls, of which the last has a fine thread encompassing its base. *Whorls* nearly four besides those of the embryo, round, and of very rapid increase; the last three are completely and increasingly parted from one another. *Suture* very deep in the short space where, below the embryo, the whorls are united. *Mouth* oval and small. *Lip* very thin all round, patulous on the base. H. 0·2 in. B. 0·09. Mouth, height 0·059, breadth 0·051.

This curious little species resembles the young of some species of *Vermetus*, and hence its name. It slightly recalls *Scalaria hyalina*, Sow., from Luzon, but the coarse ribs of that shell with their highly polished interstices are very unlike. It is evidently closely connected with *Scalaria semidisjuncta*, Jeffr. (see Proc. Zool. Soc. Lond., 1844, p. 135, pl. x. fig. 7).

7. *Scalaria philtata*,[1] n. sp. (Pl. IX. fig. 5).

Station 135c. October 17, 1873. Lat. 37° 25′ 30″ S., long. 12° 28′ 30″ W. Nightingale Island, Tristan da Cunha. 100 to 150 fathoms.

Shell.—Small, thin, delicate, rather broad; ornamented with slightly procumbent prickles and spiral threads; the apex is small, blunt, and smooth; the suture is deeply constricted. *Sculpture:* Longitudinals—each whorl is crossed by about twenty-five fine narrow oblique procumbent lamellæ, which twist round the spire from left to right. Spirals—these longitudinal lamellæ are on each whorl cut across by two strong furrows in the middle of the whorls, and by one at the top and bottom deeply impressing the suture; the effect of these is to form on each whorl three rows of compressed prominent prickles; the base is edged by a rounded faintly tubercled thread; within this is a strongish furrow, bounded on its inner side by another rounded thread which encircles

[1] φιλτατός, most beloved, by reason of its beauty.

the slight umbilical depression. *Colour* sub-hyaline white. *Spire* conical, short, scalar. *Apex* consists of two small turbinated smooth embryonic whorls, of which the extreme tip rises in a minute dome. *Whorls* seven in all, rounded but flattened, and increasing more rapidly in breadth than in height. *Suture* strongly constricted, almost channelled, very oblique. *Mouth* round, slightly effuse at the point of the pillar. *Inner lip* just continuous and no more across the body, slightly reverted on the pillar, where there is behind it a small channel and a slight umbilical depression. H. 0·098 in. B. 0·05. Mouth, height 0·028, breadth 0·028.

The only *Scalaria* which this in the least degree recalls is *Scalaria dianæ*, Hinds, which is, however, utterly different.

8. *Scalaria* (*Cirsotrema*) *hellenica*, Forbes.

Scalaria hellenica, Forbes, Brit. Assoc. Report, 1843, pp. 137, 189.
Rissoa ? coronata, Philippi, Enum. Moll. Sicil., 1844, vol. ii. p. 127, pl. xxiii. fig. 7.
Scalaria crassilabrum, Sowerby, Thes. Conch., 1844, vol. i. pt. 4, p. 105, sp. 87, pl. xxxv. figs. 115, 116.
„ *scacchii*, Hörnæs, Tert. Moll. Wien (1856), vol. i. p. 479, pl. xlvi. fig. 12.
„ „ Weinkauff, Conch. Mittelmeer., vol. ii. p. 238, sp. 7.
„ *hellenica*, Nyst, Tableau du genre Scalaria, p. 36, sp. 141.
„ *scacchii*, Monterosato, Enumerazione, p. 30.
„ „ Aradas and Benoit, Conch. Mar. Sicil., p. 184, No. 492.
„ „ Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1884, p. 140, No. 20.

Station 113A. September 1, 1873. Lat. 3° 47′ S., long. 32° 24′ 30″ W. Anchorage off Fernando-Noronha. 7 to 25 fathoms. Volcanic sand and gravel.

Habitat.—Ægean Sea, 110 fathoms (Forbes), Mediterranean (Philippi), Madeira (my own dredging), Canaries, 40 to 1260 fathoms (Jeffreys).

Fossil.—The Austrian Miocene and the Piedmontese Pliocene (Nyst).

This species secretes the beautiful purple dye which is so marked a feature in the Scalarias.

9. *Scalaria* (*Cirsotrema*) *dentiscalpium*, Watson (Pl. IX. fig. 3).

Scalaria (*Cirsotrema*) *dentiscalpium*, Watson, Prelim. Report, pt. 15, Journ. Linn. Soc. Lond., vol. xvi. p. 607.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Near Cape York, Torres Straits, North Australia. 6 fathoms. Coral mud.

Shell.—Small, extremely long and sharp, most delicately, closely, and sharply ribbed and spiralled, with rounded whorls and base and an impressed suture. *Sculpture:* Longi-

tudinals—the whorls are crossed by an immense number of minute, sharp, very oblique riblets, whose course is from right to left; they extend to the whole base; at irregular intervals one of these swells to a varix. Spirals—there are similar, but smaller, more numerous, and closer-set spirals, over which the longitudinal ribs rise. *Colour* porcellanous white. *Spire* high, narrow, conical. *Apex* consists of $4\frac{1}{2}$ hardly rounded, glossy, conical whorls, parted by a scarcely impressed suture, and rising to a very minute rounded tip. *Whorls* 10 in all, convex, of regular increase; the last is small, with a well-rounded base. *Suture* rather deeply impressed, oblique. *Mouth* encircled with a strong varix, a little oblong, slightly oblique in both its planes. *Outer lip* well arched, rounded, contracted above, patulous in front. *Inner lip* narrow, thick, continuous with the outer lip H. 0·16 in. B. 0·05. Penultimate whorl, height 0·02. Mouth, height 0·04, breadth 0·03.

This is a peculiarly narrow species, of a rather remarkable style of sculpture.

10. *Scalaria* (*Acirsa*) *subdecussata*, Cantraine.

Scalaria subdecussata, Cantraine, Bull. Acad. Brux., 1835, vol. ii. p. 388.
" " Cantraine, Mém. Acad. Brux., 1840, vol. xiii. pl. vi. fig. 24.
Turritella Philippi, Aradas and Maggiore, Cat. Conch. Sicil., 1840.
Mesalia striata, Hidalgo, Cat. moll. test. mar. Espagne, &c., Journ. de conch., 1867, vol. xv. p. 394, sp. 2.
" " Weinkauff, Conch. Mittelmeeres, vol. ii. p. 323.
Scalaria subdecussata, Nyst, Tableau du genre Scalaria, p. 60, No. 295.
Acirsa " Monterosato, Enumerazione, p. 30.
Mesalia " Aradas and Benoit, Conch. Mar. Sicil., p. 187, No. 498.
Acirsa " Monterosato, Notes sur coquilles de Palerme, Journ. de conch., 1878, vol. xxvi. p. 151, No. 91.
Scalaria " Jeffreys, Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1884, p. 132, sp. 1.

February 10, 1873. Gomera, Canaries. 75 fathoms.

Habitat.—Sardinia, "common" (Cantraine), Mediterranean (Monterosato), Madeira (my own dredging), Canaries (M'Andrew), Atlantic coasts of France and Spain, from 20 to 57 fathoms (Jeffreys).

Fossil.—Pliocene of Altavilla (Tiberi *teste* Jeffreys).

This is the *Mesalia striata* of M'Andrew's Brit. Assoc. Reports, p. 40, but not of Adams (Proc. Zool. Soc. Lond., 1851, p. 279), which is from the Philippines (see Proc. Zool. Soc. Lond., 1855, p. 123). The form of the animal in this species, the operculum, and the arrangement, number, and shape of the teeth in the radula, are exactly those of a *Scalaria*, of which genus it has also the beautiful purple secretion. If I have classed the species here as an *Acirsa*, which it certainly is not, the reason is that there is no other subgenus in which it can be put, and that if subgenera are to be admitted at all, it is impossible to call such a shell as this a *Scalaria* pure and simple. It is the least typical of all Scalarias.

11. *Scalaria (Acirsa) pyrrhias*,[1] n. sp. (Pl. IX. fig. 7).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Small, short, thin, with few openly and finely reticulated rounded whorls, a deep suture, a ruddy-brown longitudinally-ribbed apex, and a largish mouth. *Sculpture:* There are on each whorl about eleven very oblique procumbent lamellæ, which twist round the spire from left to right; they become mere threads on the base. Spirals—four unequal and unequally separated rounded threads occupy the middle of each whorl; the two highest coincide with a prickle-like projection of the longitudinal lamellæ; the upper part of the whorl above this is bare, as is also the lower part of each whorl; the base is also without spirals, but is encircled by one running on from the insertion of the lip. *Colour* white. *Spire* rather short, conical. *Apex* consists of five conical, slightly convex, longitudinally ribbed whorls, which are of a chestnut colour.[2] *Whorls* 4, besides those of the apex, rounded. *Suture* deeply constricted, rather oblique. *Mouth* not small. *Outer lip* badly broken. *Inner lip* reverted, with a very small umbilical depression behind it. H. 0·19 in. B. 0·078. Mouth, height 0·055, breadth 0·05.

2. *Crossea*, A. Adams, 1865.

Crossea striata, Watson (Pl. IX. fig. 8).

Crossea striata, Watson, Prelim. Report, pt. 15, Journ. Linn. Soc. Lond., vol. xvi. p. 609.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Near Cape York, North Australia. 6 fathoms. Coral mud.

Shell.—Very small, white, turbinate, spirally striated, with a sub-scalar spire, a minute rounded apex, tumid last whorl, and a small strongly bordered umbilicus. *Sculpture:* Longitudinals—there are microscopic lines of growth which gather into puckers below the suture. Spirals—there are furrows broadish and square-cut, parted by flat raised surfaces of about twice their breadth; these extend to below the periphery, but not to the base, the most of which is smooth; round the umbilicus is a high raised thread, which relatively to the size of the shell is enormous. *Colour* porcellanous white. *Spire* raised, subscalar. *Apex* very small, tabulated, with the extreme tip just visible. *Whorls* 4, well rounded, a very little tabulated below the suture; the last is tumid. *Suture* strongly marked, but hardly impressed. *Mouth* round, but a little gibbous, bluntly pointed above. *Outer lip* scarcely patulous, well arched, thin. *Inner lip* regularly curved from the corner of the mouth to the point of the pillar, which is arched, with a thin inner edge parting the mouth

[1] πυρρίας, red head.

[2] Hence the name.

from the umbilicus and joining the outer lip, while round the umbilicus twists the strong marginal cord which runs out into a strong blunt tooth at the tip of the pillar. *Umbilicus* deep, small, but strongly marked. H. 0·06 in. B. 0·05. Penultimate whorl, height 0·01. Mouth, height 0·03, breadth 0·028.

This species differs from *Crossea bellula*, A. Ad., in being higher, with a smaller and more scalar spire, and a more elongated base. Its smaller size, higher and narrower form, striated sculpture, and strong projecting pillar-point distinguish it markedly from *Crossea concinna*, Ang., Port Jackson, Sydney.

Family Muricidæ, Fleming, 1828.

Genera. 1. *Murex*, Linne. 2. *Typhis*, Montf. 3. *Trophon*, Montf.

1. *Murex*, Linne, 1758.

Species.

1. *Murex* (*Tribulus*) *aduncospinosus*, Beck.
2. *Murex* (*Tribulus*) *macgillivrayi*, Dohrn.
3. *Murex* (*Tribulus*) *nigrospinosus*, Reeve.
4. *Murex* (*Tribulus*) *tenuispina*, Lam.
5. *Murex* (*Tribulus*) *ternispina*, Lam.
6. *Murex* (*Tribulus*) *acanthostephes*, Wats.
7. *Murex* (*Tribulus*) *acanthodes*, Wats.
8. *Murex* (*Haustellum*) n. sp. ?
9. *Murex* (*Chicoreus*) *calcar*, Kiener.
10. *Murex* (*Chicoreus*) *cervicornis*, Lam.
11. *Murex* (*Chicoreus*) *maurus*, Brod.
12. *Murex* (*Chicoreus*) *monodon*, Sow.
13. *Murex* (*Chicoreus*) *palmiferus*, Sow.
14. *Murex* (*Pteronotus*) *acanthopterus*, Lam.
15. *Murex* (*Pteronotus*) *triformis*, Reeve.
16. *Murex* (*Pteronotus*) *cordismei*, Wats.
17. *Murex* (*Phyllonotus*) *endivia*, Lam.
18. *Murex* (*Phyllonotus*) *zelandicus*, Q. and G.
19. *Murex* (*Ocinebra*) *aciculatus*, Lam.
20. *Murex* (*Pseudomurex*) *pholidotus*, Wats.
21. *Murex* (*Pseudomurex*) *pauper*, Wats.
22. *Murex* (*Pseudomurex*) *fusulus*, Brocchi.
23. *Murex* (*Pseudomurex*) *aëdonius*, n. sp.

1. *Murex* (*Tribulus*) *aduncospinosus* (Beck), Reeve.

Murex aduncospinosus, Beck, MS.
„ *ternispina*, var., Sowerby, Conch. Illust., No. 2, fig. 68.
„ *aduncospinosus*, Reeve, Conch. Icon., vol. iii. pl. xxiii. fig. 93.
„ „ A. Adams, Proc. Zool. Soc. Lond., 1862, p. 370, sp. 3.
„ (*Tribulus*) *aduncospinosus*, Kobelt, Jahrb. d. deutsch. malak. Gesellsch., 1877, vol. iv. p. 145, sp. 7.
„ *tribulus*, Sowerby, Thes. Conch., vol. iv. pts. 33, 34, p. 2, sp. 3 (in part), pl. cccIxxx. (i. *Gen.*) fig. 4.
„ (*Tribulus*) *ternispina*, Tryon, Manual, vol. ii. p. 78, pl. xi. fig. 118.

October 6, 1874. Amboina. 15 to 25 fathoms.

Habitat.—Philippines (Reeve and Cuming), Japan (Adams).

The embryonic apex forms a very perfect blunt but small tipped cone of $3\frac{1}{2}$ glossy, fulvous, conical, flat-sided whorls, of which the last is margined below by a very fine thread just at the

suture. It is very like that of *Murex macgillivrayi*, but the whole spire is higher than in that species, the whorls of the apex are more flattened on the sides, their suture is less impressed, and their last whorl is distinctly keeled above the suture. Sowerby (*loc. cit. supra*) makes this species a variety of *Murex tribulus*, Linne. Apart from other features of difference, the embryonic apex seems in *Murex tribulus* to be coarse, flattened, and comparatively amorphous, though the doubtful condition in this respect of the specimens I have been able to examine makes me hesitate to assert this positively.

If any one will compare the apices of *Murex ternispina*, Lam., and this species, he will hardly experience the difficulty of which Mr Tryon complains, and which led him to unite the two. In order to this comparison, however, it is necessary to avoid dealers' "cleaned" specimens, and to make sure one really has the two species.

2. *Murex* (*Tribulus*) *macgillivrayi*, Dohrn.

Murex macgillivrayi, Dohrn, Proc. Zool. Soc. Lond., 1862, p. 203, sp. 4.
„ „ Sowerby, Thes. Conch., vol. iv. pts. 33, 34, p. 3, sp. 9, pl. cccxcvi. (xvii. *Gen.*) fig. 162.
„ (*Tribulus*) *scolopax*, Tryon, Manual, vol. ii. p. 77, pl. xxiv. fig. 208.
Murex macgillivrayi, E. A. Smith, "Alert" Collections, p. 44, No. 14, pl. v. fig. *C*.

September 8, 1874. Cape York, off Albany Island, Torres Strait. 3 to 12 fathoms.

Habitat.—Lizard Islands, Australia (British Museum).

The embryonic apex consists of a little cone formed by three glossy, fawn-coloured, rounded whorls, the last of which is scarce perceptibly marginated below by a fine sutural thread. Their suture is impressed.

This species certainly approaches very closely to *Murex aduncospinosus*, Beck, but has only two ribs between the varices instead of four or five; the surface is closely scored with lines of growth, instead of being delicately laminated, which *Murex aduncospinosus* is especially on the varices at the suture; the spire is lower, the embryonic whorls are rounded, and are parted by a slightly impressed suture, while in that other the apical whorls form an almost perfect flat-sided cone, on which the suture is scarcely impressed at all; round the base of these is a sharp, distinct keel, of which in *Murex macgillivrayi* there is hardly a trace.

For comparison with *Murex acanthodes*, Wats., see that species.

3. *Murex* (*Tribulus*) *nigrospinosus*, Reeve.

Murex nigrospinosus, Reeve, Conch. Icon., vol. iii. pl. ix. fig. 109, pl. xx. fig. 79.
„ „ Küster, Conch. Cab. (ed. Küster), p. 75, pl. xxvi. fig. 5.
„ (*Tribulus*) *nigrospinosus*, Kobelt, Jahrb. d. deutsch. malak. Gesellsch., 1877, vol. iv. p. 145, sp. 8.
„ *nigrospinosus*, Sowerby, Thes. Conch., pts. 33, 34, p. 4, sp. 12, pl. cccIxxxi. (ii. *Gen.*) fig. 11.
„ (*Tribulus*) *nigrospinosus*, Tryon, Manual, vol. ii. p. 78, pl. ix. fig. 109.

Station 208. January 17, 1875. Lat. 11° 37′ N., long. 123° 31′ E. Philippines. 18 fathoms. Blue mud.

Habitat.—Andaman Islands and Red Sea (British Museum).

After much hesitation, I am convinced that *Murex nigrospinosus* of Reeve is a good species, and it is the more necessary to say so in the face of the hopeless confusion threatened by revolutionary processes in reference to this and many other species. That many species are badly defined is certain, and the abolition of these on evidence of identity really adduced is a true service; but to slump species on superficial resemblances, merely because their distinctive features are not easily recognised, however striking when once known, is only to return to chaos. Mr Tryon can hardly have had before him correctly defined and well-preserved specimens of this species and of *Murex tribulus*, Linne, when he asserts (Manual of Conchology, *loc. cit.*), that Reeve's species is merely a colour-variety of that of Linne. The real difficulty in distinguishing them lies in the rarity of specimens in which the characteristic features have been spared by the dealers. The fine specimens of *Murex tribulus*, Linne, in the British Museum are thus grievously injured. The opportunity of examining a specimen somewhat better preserved I owe to the kindness of Professor v. Martens, who sent it me from the Berlin Museum. The precise form of the apex I cannot determine, so severely has it been cleaned, but it is evidently larger than that of *Murex nigrospinosus*, with a broader base; the succeeding whorls of the spire (of which there are two without varices) are larger, more scalar, of more rapid increase, and have each nine comparatively large, distant, tubercled, squamous ribs, scored by two strongish spiral threads. In *Murex nigrospinosus* the apex is a little rounded knob, consisting of barely two rounded polished whorls, of which the tip is smooth, and the second, which is scarcely larger than the first, has a sharp spiral thread encircling its base; they are separated by a well-impressed suture. These are succeeded by about $2\frac{1}{4}$ unvarixed, high, rounded whorls of slow increase, each crossed by 13 small rounded ribs and scored by 4 fine spiral threads. There are many other obvious differences, such as the greater height of the spire with fewer whorls in *Murex tribulus*, Linne, diversity of sculpture, peculiarity of arrangement and greater shortness of spines; but these are recognisable in any ordinarily well-preserved specimens.

4. *Murex* (*Tribulus*) *tenuispina*, Lam.

Chemnitz, Conch. Cab., vol. xi. p. 103, pl. clxxxix. fig. 1821, pl. cxc. fig. 1822.
Murex tenuispina, Lamarck, Anim. s. vert., vol. vii. p. 158, and (ed. Desh.) vol. ix. p. 566, sp. 4.
" " Deshayes, Encycl. méthod., vers. vol. iii. p. 896, No. 4.
" " Kiener, Iconographie, p. 5, sp. 2, pl. vi. fig. 1, pl. vii. fig. 1.
" " Quoy and Gaimard, "Astrolabe" (Zool.), vol. iii. p. 528, pl. xxxvi. figs. 3, 4.
" " Sowerby, Conch. Illust., No. 1.
" *tenuispinosus*, Sowerby, Gen. Rect. and Foss. Shells, vol. ii. pl. ccxxv. fig. 2.
" *tenuispina*, Reeve, Conch. Icon., vol. iii. pl. xxi. fig. 85.
" " Küster, Conch. Cab. (ed. Küster), p. 27, pl. xi. fig. 3, pl. xx. fig. 3.
" (*Tribulus*) *tenuispina*, Kobelt, Jahrb. d. deutsch. malak. Gesellsch., 1877, vol. iv. p. 145, sp. 3.
" *tenuispina*, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 169.
" " Sowerby, Thes. Conch., pts. 33, 34, p. 2, sp. 1, pl. cccIxxx. (*i. Gen.*) fig. 7.
" (*Tribulus*) *tenuispina*, Tryon, Manual, vol. ii. p. 78, pl. x. fig. 113.
" " " E. A. Smith, "Alert," Indo-Pacific Collections, Moll., p. 42, No. 11.

Station 203. October 31, 1874. Lat. 11° 6′ N., long. 123° 9′ E. Philippines. 20 fathoms. Mud.

Habitat.—Indian Ocean and Moluccas (Chemnitz), Torres Straits, Darnley Island, 20 to 30 fathoms (Brazier).

The embryonic apex consists of nearly two faintly yellowish-white, almost equal, rounded whorls, the second of which has a strong central carina.

5. *Murex* (*Tribulus*) *ternispina*, Lam.

Murex ternispina, Lamarck, Anim. s. vert., vol. vii. p. 158, and (ed. Desh.) vol. ix. p. 567, sp. 6.
„ „ Sowerby, Conch. Illust., No. 2, fig. 110.
„ „ Reeve, Conch. Icon., vol. iii. pls. xviii. and xix. fig. 76.
„ „ Issel, Malac. Mar. Rosso, p. 137, No. 299.
„ „ Sowerby, Thes. Conch., vol. iv. pts. 33, 34, p. 4, sp. 11, pl. ccclxxx. (ii. *Gen.*) fig. 1.
„ „ Küster, Conch. Cab. (ed. Küster), p. 57, pl. xxii. figs. 3, 4.[1]
„ (*Tribulus*) *ternispina*, Kobelt, Jahrb. d. deutsch. malak. Gesellsch., 1877, vol. iv. p. 145.
„ „ „ Tryon, Manual, vol. ii. p. 78, pl. ix. fig. 110, pl. x. figs. 111, 114, and pl. xi. figs. 117, 118.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Red Sea, China, Philippines (Kiener).

The embryonic apex consists of two glossy, brown whorls. The second is no higher nor broader than the first, which has its extreme point a little inverted and bent down on one side. The hollow spines appear on the spire before the end of the third (or first ordinary) whorl.

In citing authorities above, I have given Tryon's figures as he gives them, though obviously he has confounded several species. It were much to be wished that, before mixing up species, authors would ascertain that they really have the species they discuss. In many museums the confusion in this group is extreme. In the fine collection of the Public Museum at Liverpool, which is under so efficient a keeper as Mr Marrat, I wasted much labour over this group, only to reach the conviction that the species were not well identified.

I have not quoted Kiener, Iconog., p. 6, No. 3, pl. viii. fig. 1, and pl. ix. fig. 1, because his *Murex ternispina* is not this species, but the *Murex crassispina*, Lam.

In the British Museum there is a species which closely approaches the *Murex ternispina*, Lam. It is named *Murex Reevianus*, Shuttleworth; but I have not been able to trace its history, and possibly it never has been published. Mr Shuttleworth knew shells too well to be lightly charged with error; but is the species a good one? The embryonic apex of the specimens in the British Museum seemed to me different from those of *Murex ternispina*, Lam., but in all they have been so much eroded with acid that certainty, there at least, was impossible.

6. *Murex* (*Tribulus*) *acanthostephes*, Watson[2] (Pl. X. fig. 2).

Murex (*Tribulus*) *acanthostephes*, Watson, Prelim. Report, pt. 15, Journ. Linn. Soc. Lond., vol. xvi. p. 596.
„ *acanthostephes*, E. A. Smith, "Alert" Indo-Pacific Collections, Moll., p. 43, No. 13, pl. v. fig. B.

[1] This figure certainly does not represent this species.

[2] ἀκανθοστεφής, prickle-crowned.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, off S.W. point of Papua. 28 fathoms. Green mud.

Shell.—Thinnish, ashy white, globose, with a short scalar spire, spinous whorls, a largish smooth waxy irregularly tipped apex (which is quite overtopped by the spines from the outer lip upward), an oval mouth, deeply crenulated outer lip, short rounded base, and a very fine produced, almost straight, long-spined snout. *Sculpture:* Longitudinals—there are on each whorl three narrow corresponding varices, scarcely visible on the earlier whorls, and chiefly marked on the last by the series of long thin front-furrowed spines which adorn them; of these spines there are 6 (or 7 ?) on the last varix, 6 on the penultimate, and 5 on the preceding one; the highest is very little bent, and rises on each whorl high above the apex, being almost parallel to the axis of the shell; the others, which are alternately short and long, are more or less bent, and incline upwards: there is only one spine on each varix of the spire; these varices are prolonged down the snout, and each is armed with about six, long, thin, horizontally straight but forward-bending, front-furrowed, nearly equal spines, between each pair of which in front is a small, fine, procumbent thorn; the system of triple varices begins in the course of the second regular whorl: above this point the shell is scored across by from 10 to 16 scars of old mouth-edges, which at the top and bottom of the whorl project into little tubes, hollow, and in front open; the lower row of these tubes is only visible on the first regular whorl, and is gradually buried by the overlap of the suture: between the varices there are no ribs, but only fine, discontinuous undulations, with superficial regular puckerings and lines of growth, which behind the lip exhibit fine crowded laminæ. Spirals—there are on the last whorl 3 strongish depressed rounded threads corresponding to the 3 largest spines; corresponding to the smaller spines are smaller threads; between all of these are one or more fine threads parted by shallow furrows wider than they: besides all these the whole surface is scored with very minute, rather distant, and somewhat irregular threadlets; the highest thread, connecting the series of largest spines, forms a strongly angulated shoulder-edge on the upper whorls. *Colour* ashy white with a rufous tinge, which is strongest on the spines and the point of the snout; the apex is waxy and subrufous; the mouth-edge all round is porcellanous white, with one or two chestnut specks on the outer lip, the largest and brightest being just at the top of the mouth. *Spire* rather low, conical, scalar. *Apex* consists of $2\frac{1}{2}$ rounded, more or less depressedly globose whorls, of which the earliest is always deformed as if crushed; the others are smooth, and are parted by an impressed suture; they terminate abruptly in a patulous and prominent mouth-edge, which has a small sinus at the top. *Whorls* 7, angularly carinated above, and with a sloping shoulder between the suture and the keel; the upper whorls are subcylindrically conical, the last tumid and rounded, with a very contracted convex base produced into a very long subconical snout, which is flexuous in front, where an old snout-end stands off like a splinter.

Suture a slightly impressed line in the obtuse angle at the junction of the whorls. *Mouth* oval, with a blunt angle above and another below, where it is produced into the long, flexuous, and almost closed canal. *Outer lip* very equally arched; it rises on the body; its edge contracts, and is cut up into a series of blunt-tipped saw-teeth, the deep and narrow cuts between which run back into the front furrows of the spines; the basal one of these saw-teeth is large, flat, and very prominent. *Inner lip* spreads thinly and widely but indefinitely on the body above; on the base it separates from the body as a thin, prominent, patulous lamina, curving round to the right lower down, leaving behind it a deep chink, which continues as a furrow down the snout, where the labial lamina is bent abruptly over, so as to cover and almost close the canal. H. 3·1 in (to point of spines beyond apex 3·6). B. 0·93 (to tips of spines 2·2). Penultimate whorl, height 0·25. Mouth, height 2·65 (excluding canal 0·72), breadth 0·5.

This singularly beautiful species resembles most of all *Murex aduncospinosus*, Beck, in which, however, the direction of the spines is different, standing out much more from the axis; the texture and ornamentation of the shell are quite different, the earlier whorls not being ornamented with a double row of hollow squamous spines as here; the spire is in that much higher, the whorls less angulated, and the apex is a minute perfect cone of $3\frac{1}{2}$ whorls. In *Murex ternispina*, Lam., the earlier regular whorls have somewhat similar, hollow, squamous spines; but there is only one row of these, and the apex is quite different. *Murex tribulus*, Linn., though at first sight very unlike, has some very strong points of resemblance: it is a bigger, coarser shell, with shorter, fewer, and more massive spines; but the direction of all these agrees pretty closely with those in the Challenger specimen; its spiral threads are enormous compared with those of the other, and are rudely tubercled; yet in neither species are there any longitudinal ribs; though the snout is very short and thick compared with that of *Murex acanthostephes*, obliquely scored in connection with the spines where the other is smooth and much more bent at the point, yet the bend has very much the same character. In *Murex tribulus* the whorls are constricted below, which makes the suture dissimilar, yet the general form of the spire is not unlike. In regard to the apex I am unable to speak with certainty. A specimen of *Murex tribulus*, which Professor v. Martens most obligingly sent me for examination from the Berlin Museum, turned out to have suffered from the effects of cleaning almost as much as those in the British Museum; so far, however, as the apex was recognisable, it seemed to have fewer whorls, and to be somewhat more conical but more amorphous, and the first regular whorls seem to have only one row of squamous tubercles, as in *Murex ternispina*, Lam.

Murex cabritii, Bernhardi, as compared to the Challenger species, is a much shorter, stouter form, with shorter, stronger spines, and with three rows of ribs between the spinous varices.

7. *Murex* (*Tribulus*) *acanthodes*,[1] Watson (Pl. X. fig. 1).

Murex (*Tribulus*) *acanthodes*, Watson, Prelim. Report, pt. 15, Journ. Linn. Soc. Lond., vol. xvi. p. 599.

[1] ἀκανθώδης, prickly.

September 8, 1874. Cape York (Australia), off Albany Island. 3 to 12 fathoms.

Shell.—Thinnish, pale rufous, globose, with a short scalar spire, spinous whorls, a minute, regular, conically globose, glossy chestnut apex, an oval mouth, a denticulated and, on the edge, slightly crenulated outer lip, a short rounded base, and a long straightish snout. *Sculpture:* Longitudinals—there are three strongish corresponding varices on each whorl; they are marked by short, stout, diverging, front-furrowed spines, whose numbers are probably incomplete (as the specimens are young), but are evidently few; these spinous varices run straight down the snout; between the varices are two tubercled ribs; the first $2\frac{1}{2}$ regular whorls present no distinction between these varices and ribs, but are crossed by about 10 tubercled ribs, on each of which above is a single, short, hollow spine; besides these are many faint, very slightly raised, rounded threads. Spirals—there are on the last whorl about 20 narrow, rather raised, rounded, distant threads; others similar appear on the snout, but become obsolete in front, the latter third being glossy and smooth; the upper whorls are bisected by an angular keel, besides which, on the last whorl, there is a blunter keel where the basal contraction begins: both of these keels are accentuated by the tubercles into which they rise in crossing the longitudinal ribs and the spines on the varices. *Colour* dead white with a rufous tinge, which is stronger on the spire, on two faint bands corresponding with the keels, on the spines, and on the glossy point of the snout, where are some rich chestnut stains; the apex is also chestnut. *Spire* low, conical, scalar. *Apex* consists of three conically globose, rounded, glossy, chestnut whorls, of which the extreme tip is minute, rounded, and a little bent down and inserted; they terminate abruptly in a patulous and slightly prominent mouth-edge, which is regularly curved, has no sinus, but has a concave edge. *Whorls* 8; but the shell is not full-grown; the upper ones are angulately carinated in the middle, with a sloping shoulder between the suture and the keel; they are all slightly rounded, with a very faint contraction into the suture; the last is tumid, angularly rounded, with a very contracted convex base produced into a very long snout. *Suture* angulated and slightly constricted. *Mouth* oval, rounded above, pointed below, where it runs into the long, nearly closed, linear, straight canal. *Outer lip* semicircular; its edge, which projects markedly in front of the labral varix, is somewhat cut up by slashes continuous with the furrows of the spines; a basal tooth is somewhat prominent; internally the lip is feebly toothed. *Inner lip* spreads thinly and narrowly on the base, and advances straight down the pillar as a reflexed lamina, which is abruptly turned over to the right to cover the canal, leaving behind it a chink above and a long straight furrow below. H. 1·8 in. B. 0·6. Penultimate whorl, height 0·13. Mouth, height 1·5 (excluding the canal 0·38), breadth 0·27.

This species is very like *Murex macgillivrayi*, Dohrn, but is certainly distinct. Like that species it has two intervarical ribs; the texture of the shell, too, and the short spines are similar; but the spiral threads are different, the spire is bigger, broader, and shorter, and that species has

none of the hollow squamous spines which ornament the earlier whorls; the embryonic whorls of the apex are a good deal alike; but the cone in *Murex macgillivrayi* is smaller and less regular, its whorls being more rounded and parted by a deeper suture. In these respects the apex resembles *Murex aduncospinosus*, Beck, from which it manifestly differs widely in other ways. In the hollow squamous spines of the earlier whorls it resembles *Murex ternispina;* but the arrangement of these is different, and the embryonic apex of that species is utterly diverse. *Murex cabritii*, Bernardi (Journ. de conch., vol. vii., 1858, p. 301, pl. x. f. 3), has a considerable general resemblance, but is not angularly carinated above, has not a scalar spire, has a shorter and coarser apex, has 4 (*teste* Bernardi, but his figure and Sowerby, in his "Thesaurus," pt. 33, p. 2, pl. cccxciii. f. 137, both in text and figure, say 3) intervarical ribs, and the spirals are much coarser and less sharp.

8. *Murex* (*Haustellum*), sp.

Murex (*Pteronotus*), sp. (*Murex dentifer*, n. sp.?), Watson, Prelim. Report, pt. 15, Journ. Linn. Soc. Lond., vol. xvi. p. 601.

Station 194. September 29, 1874. Lat. 4° 34′ S., long. 129° 57′ 30″ E. S.W. of Papua. 200 fathoms. Volcanic mud.

This is a massive full-grown (?) shell, which in my list I have called *Murex dentifer*, as a new species, but which is in too bad condition for detailed description. It certainly is not in the British Museum, nor is it figured so far as I know. It is not unlike in shape to the immature shell of *Murex imperialis*, Swains., from California; but its snout seems to have been long, and was certainly narrow. It has 3, not 5 varices (which are rounded, high, narrow, and continuous from whorl to whorl), with 4 (or on the last segment 6) biggish rounded ribs between the varices; the old mouth-edges on the front of the varices are not like saw-teeth, but smooth and continuous; the mouth is small, oval, not large; the lip is not internally thickened; and the surface is marked with regular strong spiral threads and with fine regular lines of growth, and is not squamously fine-grained. The outer lip is scored with long, sharpish, but fine teeth; the inner lip is closely set with teeth, which are short and strong on the pillar, feeble and a little longer on the body, with a round tubercle at the very top; there is a broad glaze on the body, which separates and stands out as a strong lamina on the pillar, with a deep umbilical cleft behind it. It is very near *Murex haustellum*, Linn., but the ribbing between the varices is different, and the inner lip is toothed on the body.

9. *Murex* (*Chicoreus*) *calcar*, Kiener.

Murex calcar, Kiener, Iconog. coq. viv., p. 107, sp. 81, pl. xxxvi. fig. 2.
„ *Senegalensis*, var., Sowerby, Conch. Illust., fig. 61.
„ *calcar*, Reeve, Conch. Icon., vol. iii. pl. xxiv. fig. 100.
„ „ Küster, Conch. Cab. (ed. Küster), p. 67, sp. 66, pl. xxiv. fig. 7.
„ (*Chicoreus*) *calcar*, Kobelt, Jahrb. d. deutsch. malak. Gesellsch., 1877, vol. iv. p. 152.
„ *calcar*, Sowerby, Thes. Conch., pts. 33, 34, p. 7, sp. 26, pl. ccclxxxiii. (iv. *Gen.*) fig. 36.
„ (*Chicoreus*) *Senegalensis*, var. *calcar*, Tryon, Manual, vol. ii. p. 94, pl. xvii. fig. 169.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Habitat.—Senegambia (Kobelt).

10. *Murex* (*Chicoreus*) *cervicornis*, Lamarck.

Murex cervicornis, Lamarck, Anim. s. vert., vol. vii. p. 163, and (ed. Desh.) vol. ix. p. 575, No. 19.
„ „ Sowerby, Genera, vol. ii., Murex, pl. ccxxiv. fig. 4.
„ „ Kiener, Iconog., p. 32, sp. 22, pl. xx. fig. 2.
„ „ Reeve, Conch. Icon., vol. iii. pl. xvi. fig. 66.
„ „ Küster, Conch. Cab. (ed. Küster), p. 87, sp. 95, pl. xxxi. figs. 5, 6.
„ (*Chicoreus*) *cervicornis*, Kobelt, Jahrb. d. deutsch. malak. Gesellsch., 1877, vol. iv. p. 152.
„ *cervicornis*, Sowerby, Thes. Conch. pts. 33, 34, p. 11, sp. 47, pl. ccclxxxii. (iii. *Gen.*) fig. 30.
„ (*Chicoreus*) *cervicornis*, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 171, No. 8.
„ „ „ Tryon, Manual, vol. ii. p. 92, pl. xv. fig. 155.
„ *cervicornis*, E. A. Smith, "Alert" Collections, Moll., p. 45, No. 16.

September 8, 1874. Cape York, off Albany Island, Torres Straits. 3 to 12 fathoms.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Near Cape York. 6 fathoms. Coral mud.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York. Off S.W. point of Papua. 28 fathoms. Green mud.

Habitat.—New Holland (Kiener), Torres Straits and North-Western Australia (Brazier), East coast of Australia (an unnamed specimen in British Museum).

11. *Murex* (*Chicoreus*) *maurus*, Broderip.

Murex maurus, Broderip, Proc. Zool. Soc. Lond., 1832, p. 174.
„ „ Kiener, Iconog., p. 38 (*Murex adustus*, in part).
„ „ Sowerby, Conch. Illust., sp. 39, figs. 12, 67.
„ „ Reeve, Conch. Icon., vol. iii. pl. iv. fig. 16.
„ „ Lamarck, Anim. s. vert. (ed. Desh.), vol. ix. p. 573, *note*.
„ „ Kobelt, Jahrb. d. deutsch. malak. Gesellsch., 1877, vol. iv. p. 150, sp. 48.
„ „ Sowerby, Thes. Conch., pts. 33, 34, p. 15, sp. 66, pl. ccclxxxiv. (v. *Gen.*) fig. 54.
„ (*Chicoreus*) *maurus*, Tryon, Manual, vol. ii. p. 89, pl. xiv. figs. 138, 139, 142.

September 8, 1874. Cape York, off Albany Island, Torres Straits. 3 to 12 fathoms.

Habitat.—Island Annaa, in Pacific (Brod.)

12. *Murex* (*Chicoreus*) *monodon*, Sowerby.

Martini, Conch. Cab., vol. iii. p. 314, pl. cv. figs. 987, 988.
Murex monodon, Sowerby, Tankerville Cat., Appendix, p. xix. No. 1703.
„ *aranea*, Kiener, Iconog., p. 34, sp. 24, pl. xxxvi. fig. 1.

Murex monodon, Reeve, Conch. Icon., vol. iii. pl. v. fig. 21.
" " Lamarck, Anim. s. vert. (ed. Desh.), vol. ix. p. 604, sp. 72.
" " Küster, Conch. Cab. (ed. Küster), p. 39, sp. 31, pl. xvi. figs. 1, 2.
" (*Chicoreus*) *monodon*, Kobelt, Jahrb. d. deutsch. malak. Gesellsch., 1877, vol. iv. p. 151, sp. 67.
" *monodon*, Sowerby, Thes. Conch., pts. 33, 34, p. 10, sp. 46, pl. ccclxxxv. (vi. *Gen.*) figs. 55, 56.
" (*Chicoreus*) *monodon*, Tryon, Manual, vol. ii. p. 92, pl. xvi. fig. 158.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Near Cape York. 6 fathoms. Coral mud.

Habitat.—Torres Straits, Northern Australia.

13. *Murex* (*Chicoreus*) *palmiferus*, Sowerby.

Murex palmiferus, Sowerby, Conch. Illust., sp. 43, f. 99.
" " Sowerby, Proc. Zool. Soc. Lond., 1840, p. 142.
" " Reeve, Conch. Icon., vol. iii. pl. iv. fig. 20.
" (*Chicoreus*) *palmiferus*, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 186, No. 5.
" " " Kobelt, Jahrb. d. deutsch. malak. Gesellsch., 1877, p. 150.
" *palmiferus*, Sowerby, Thes. Conch., pts. 33, 34, p. 18, sp. 84, pl. ccclxxxiii. (iv. *Gen.*) fig. 41.
" (*Chicoreus*) *palmiferus*, Tryon, Manual, vol. ii. p. 90, pl. xiv. figs. 146, 147, pl. xxiv. fig. 215, pl. xxv. fig. 218.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait, South Australia. 38 fathoms. Sand and shells.

Habitat.—Port Jackson (Angas).

Sowerby's attribution of this species to the Red Sea is not confirmed by Issel, nor that of Tryon to the Indian Ocean by von Martens.

14. *Murex* (*Pteronotus*) *acanthopterus*, Lamarck.

Murex acanthopterus, Lamarck, Anim. s. vert., vol. vii. p. 165, and (ed. Desh.) vol. ix. p. 577, No. 25.
" " Kiener, Iconog., p. 105, sp. 79, pl. xxxviii. fig. 2.
" " Wood, Ind. Test., p. 132, pl. xxvii. fig. 91.
" " Sowerby, Conch. Illust., sp. 59, f. 51.
" " Reeve, Conch. Icon., vol. iii. pl. xvi. fig. 64.
" " Küster, Conch. Cab. (ed. Küster), p. 98, sp. 111, pl. xxxiv. fig. 2.
" (*Pteronotus*) *acanthopterus*, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 186, No. 4.
" " " Kobelt, Jahrb. d. deutsch. malak. Gesellsch., 1877, p. 238.
" *acanthopterus*, Sowerby, Thes. Conch., pts. 33, 34, p. 21, sp. 95, pl. ccclxxxix. (x. *Gen.*) fig. 90, pl. cccxcii. (xiii. *Gen.*) fig. 127.
" (*Pteronotus*) *acanthopterus*, Tryon, Manual, vol. ii. p. 85, pl. xl. fig. 512.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Near Cape York. 6 fathoms. Coral mud.

Habitat.—Port Jackson (Angas).

Lamarck says of this species that its "caractère essentiel consiste en ce que les 3 ailes membraneuses dont elle est munie sont interrompues sur tous les étages de la spire, et ne sont continues que depuis le sommet du dernier tour jusqu'à l'extrémité de la queue." His own specimen in the Geneva Museum has distinctively this feature, but it is one given to it by too rough cleaning with acid. This has, as usual, destroyed the whole surface and removed a large part of the thin continuous laminæ, which have besides been broken by violence.

15. *Murex* (*Pteronotus*) *triformis*, Reeve.

Murex triformis, Reeve, Conch. Icon., vol. iii. pl. xiii. fig. 53.
„ „ Küster, Conch. Cab. (ed. Küster), p. 85, sp. 92, pl. xxx. fig. 4.
„ (*Pteronotus*) *triformis*, Angas, South Austr. Moll., Proc. Zool. Soc. Lond., 1865, p. 157, No. 3.
„ „ „ Kobelt, Jahrb. d. deutsch. malak. Gesellsch., 1877, p. 161.
„ *triformis*, Sowerby, Thes. Conch., pts. 33, 34, p. 21, sp. 96, pl. cccIxxxix. (x. *Gen.*) fig. 92, pl. cccxcii. (xiii. *Gen.*) fig. 126.
„ (*Pteronotus*) *triformis*, Tryon, Manual, vol. ii. p. 85, pl. xl. fig. 511.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait, South Australia. 38 fathoms. Sand and shells.

Habitat.—New Holland (Reeve), Port Lincoln, South Australia (Angas).

16. *Murex* (*Pteronotus*) *cordismei*, Watson (Pl. X. fig. 5).

Murex (*Pteronotus*) *cordismei*, Watson, Prelim. Report, pt. 15, Journ. Linn. Soc. Lond., vol. xvi. p. 601.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 fathoms. Sand and shells.

Shell.—Thinnish, pale, fusiform, biconical, scalar, with three foliated and spinous varices, an elongated spire, a papillary tip, tubercled rounded whorls, an elongated scarcely constricted base, and a large flat snout. *Sculpture:* Longitudinals—there are on each whorl three foliated varices, which at the corner of the shoulder rise into a semitubular, upturned, and slightly reverted spine; they run out on the snout: between each two varices and nearly on a level with the spines are three large prominent rounded tubercles, which are somewhat produced longitudinally; the lines of growth are very slight. Spirals—besides the carination caused by the line of tubercles and spines, there is on the base a slight angulation. *Colour* pale. *Spire* rather high, conical, scalar. *Apex* consists

of two largish cylindrical whorls, of which the top is angulated and obliquely truncated, and the extreme tip inserted. *Whorls* 6, of slow increase, feebly angulated, with a sloping shoulder; the last is slightly tumid and elongated, with a slightly constricted base produced into a rather large flattened snout. *Suture* linear, a little impressed. *Mouth* oblong, not patulous, rounded above, where to the right a canal runs out into the labral spine; it is pointed below, where it is prolonged into the longish canal. *Outer lip* well arched, prominent, thin. *Inner lip*—above it is continuous with the outer lip; its course is semicircular; on the body it expands with a thin edge, which in front, near the opening of the canal, rises in a thin lamina, and is then bent over to the right to cover the canal; behind it to the left the pillar is scored with the projecting laminæ of the old canal-ends, which connect themselves with the longitudinal varices. H. 0·42 in. B. 0·2. Penultimate whorl, height 0·06. Mouth, height 0·25 (without the canal 0·11), breadth 0·07.

This little shell is very like a *Typhis*, but its spines are not pervious.

17. *Murex* (*Phyllonotus*) *endivia*, Lamarck.

Martini, Conch. Cab., vol. iii. p. 331, pl. cvii. fig. 1008.
Murex endivia, Lamarck, Anim. s. vert., vol. vii. p. 168, and (ed. Desh.) vol. ix. p. 583, No. 35.
„ „ Sowerby, Conch. Illust., No. 92 (without a fig.)
„ „ Kiener, Iconog., p. 52, sp. 37, pl. xxxv. fig. 1.
„ „ Reeve, Conch. Icon., vol. iii. pl. vii. fig. 27.
„ „ Wood, Ind. Test., p. 127, pl. xxv. fig. 18 (*Murex saxatilis*, Linne, in part).
„ „ Küster, Conch. Cab. (ed. Küster), p. 42, sp. 35, pl. xvii. fig. 7.
„ (*Phyllonotus*) *endivia*, Kobelt, Jahrb. d. deutsch. malak. Gesellsch., 1877, p. 158, sp. 112.
„ *endivia*, Sowerby, Thes. Conch., pts. 33, 34, p. 32, sp. 148, pl. cccxcv. (xvi. *Gen.*) figs. 153, 154.
„ (*Phyllonotus*) *endivia*, Tryon, Manual, vol. ii. p. 102, pl. xxvi. figs. 227–229.

Station 208. January 17, 1875. Lat. 11° 37′ N., long. 123° 31′ E. Philippines. 18 fathoms. Blue mud.
January 1875. Zebu, Philippines. Shore.

Habitat.—Philippines (Reeve and Sowerby).

18. *Murex* (*Phyllonotus*) *zelandicus*, Quoy and Gaimard.

Murex zelandicus, Quoy and Gaimard, "Astrolabe," vol. iii. p. 529, pl. xxxvi. figs. 5–7.
„ „ Lamarck (ed. Desh.), vol. ix. p. 608, sp. 78.
„ „ Kiener, p. 54, sp. 38, pl. xxvii. fig. 2.
„ „ Sowerby, Conch. Illust., fig. 34, sp. 99.
„ „ Gray, Append. to Dieffenbach's New Zealand, vol. ii. p. 229, No. 6.
„ „ Reeve, Conch. Icon., vol. iii. pl. xxxiv. fig. 177.
„ „ Küster, Conch. Cab. (ed. Küster), p. 119, sp. 126, pl. xxxvi. figs. 1, 2.

Murex (*Phyllonotus*) *zelandicus*, Kobelt, Jahrb. d. deutsch. malak. Gesellsch., 1877, vol. iv. p. 158.
„ *zelandicus*, Sowerby, Thes. Conch., pts. 33, 34, p. 29, sp. 132 (xv. *Gen.*), pl. cccxciv. fig. 150.
„ „ Hutton, Manual of New Zealand Mollusca, p. 46.
„ (*Phyllonotus*) *zelandicus*, Tryon, Manual, vol. ii. p. 108, pl. xxix. fig. 268.

Station 167A. June 27, 1874. Lat. 41° 4′ S., long. 174° 19′ E. Queen Charlotte Sound, near Long Island. 10 fathoms. Mud.

Station 171. July 15, 1874. Lat. 28° 33′ S., long. 177° 50′ E. 45 miles N. of Kermadec Island. 600 fathoms. Hard ground. Bottom temperature 39·5°.

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ E. Inside the reef off Nukalofa, Tongatabu. 18 fathoms. Coral mud.

Habitat.—Cook's Strait, New Zealand (Quoy and Gaimard).

19. *Murex* (*Ocinebra*) *aciculatus*, Lam.

Murex aciculatus, Lamarck, Anim. s. vert., vol. vii. p. 176, and (ed. Desh.) vol. ix. p. 600, sp. 66.
„ *inconspicuus*, Sowerby, Conch. Illust., figs. 81 and 117.
„ „ Reeve, Conch. Icon., vol. iii. pl. xxxii. fig. 164.
„ *corallinus*, Scacchi, Catal., p. 11, No. 16, fig. 15.
Fusus lavatus, Philippi, Enum. Moll. Sicil., vol. i. p. 203.
„ *corallinus*, Philippi, Enum. Moll. Sicil., vol. ii. p. 178, sp. 8, pl. xxv. fig. 29.
Murex „ Forbes and Hanley, Brit. Moll., vol. iii. p. 374, pl. cii. figs. 5, 6.
„ „ Weinkauff, Conch. Mittelm., vol. ii. p. 90, sp. 6.
„ *aciculatus*, Gwyn Jeffreys, Brit. Conch., vol. iv. p. 310, pl. lxxxiv. fig. 2.
„ (*Ocinebra*) *aciculatus*, Monterosato, Enumeraz., p. 41.
„ *corallinus*, Searles Wood, Palæont. Soc., 1871, Crag. Moll., Suppt., pt. 1, p. 30, pl. ii. fig. 12.
„ „ Sowerby, Thes. Conch., pts. 33, 34, p. 48, sp. 223, pl. ccccliii. (xxiv. *Gen.*) fig. 251.
„ „ Seguenza, Form. Terz. Calab., pp. 262, 353.
„ (*Ocinebra*) *aciculatus*, Tryon, Manual, vol. ii. p. 119, pl. xxxvi. figs. 405, 407–409, and pl. xxxvii. fig. 441.

Station 75 :July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores, 500 fathoms. Volcanic mud. (A dead shell.)

Habitat.—North-Eastern Atlantic, Mediterranean.

Fossil.—Coralline Crag (S. Wood), Italian Tertiaries Middle Pliocene (Seguenza).

20. *Murex* (*Pseudomurex*) *pholidotus*,[1] Watson (Pl. X. fig. 3).

Murex (*Ocinebra*) *pholidotus*, Watson, Prelim. Report, pt. 15, Journ. Linn. Soc. Lond., vol. xvi. p. 602.

September 8, 1874. Flinders Passage, Cape York, Torres Straits. 7 fathoms.

[1] φολιδωτός, scaly.

Shell.—Strongish, biconical, subscalar, with a shortish spire, a small apex, and a short twisted snout. *Sculpture:* Longitudinals—there are no true varices; but there are 7 rather tumid ribs, which run continuously from the apex to the snout with a slight inclination to the left; they are parted by broader furrows, which are shallow and rounded: the whole surface is covered by sinuous laminæ which rise into vaulted scales; these laminæ are about the hundredth of an inch apart, and their interstices are scored with somewhat irregular wrinkles. Spirals—there are strong round threads, with broader flat furrows, about 6 on the penultimate and about 15 on the last whorl; it is in crossing these threads that the longitudinal laminæ rise into vaulted scales. *Colour* white, but the specimens are bleached. *Spire* rather short, conical. *Apex* small. *Whorls* about 8; they are conical above, subcarinated about the middle, and cylindrical below; the last is slightly ventricose, with a conical contracted base, produced into a short, broad, flat, reverted snout, which is twisted and obliquely cut off at the point. *Suture* slightly and angularly impressed. *Mouth* oval, with a small channel above and pointed below, where it runs into the canal, which is short, open, direct, and a little turned to the right. *Outer lip* patulous, well arched, thin on the edge, strengthened at a little distance by a varix, with 5 or 6 long, narrow, distant teeth within. *Inner lip* short and straight across the body, where it spreads thinly and indefinitely; it is angulated at the base of the pillar, which is long and very straight, and has in front 2 or 3 inconspicuous tubercles; the callus-edge is straight and sharply defined; and there is a slight umbilical depression in front between it and the cord, which twists round the point of the snout. H. 0·56 in. B. 0·3. Penultimate whorl, height 0·1. Mouth, height 0·36, breadth 0·17.

This species is not well represented in the specimens brought home. It somewhat resembles our British *Murex aciculatus*, Lam., but is a little larger, shorter, broader, more angulated, and conical. *Murex brazieri*, Ang., has the upper whorls higher, and the last much more tumid.

21. *Murex* (*Pseudomurex*) *pauper*, Watson (Pl. X. fig. 8).

Murex (*Ocinebra*) *pauper*, Watson, Prelim. Report, pt. 15, Journ. Linn. Soc. Lond., vol. xvi. p. 605.

October 6, 1874. Amboyna. 15 to 20 fathoms.

Shell.—Strong, oblong, biconical, with a high, subscalar, fine-pointed spire, and an elongated base produced into a short, flat, slightly twisted, and reverted snout. *Sculpture:* Longitudinals—there are rounded, tumid, nearly straight ribs, 9 on the last and increasingly more on the earlier whorls; they originate at the suture, and extend to the snout; their tumidity, which is most marked at the periphery, angulates the whorls: the surface is scored by fine lamellæ, which run continuously and rise into vaulted scales; between these lamellæ there are fine puckerings. Spirals—there are

rounded threads parted by furrows of the same breadth as the threads, but in which often a smaller thread occurs; the front of the snout has a strongish twisted cord scored with the old canal-edge scars. *Colour:* the specimen is bleached. *Spire* high, conical, subscalar. *Apex* small. *Whorls* 7 to 8; they are conical and shouldered above, bluntly angulated and cylindrical below. *Suture* a very slightly impressed line in the broad rounded furrow of the whorls' meeting. *Mouth* oblong to subrhomboidal, pointed and slightly channelled above; the canal in front is open and somewhat curved. *Outer lip* thickened by the external varix, but bevelled off to a narrow edge, with 7 longish small teeth within; not patulous; it is flatly arched, and is at the canal angulated. *Inner lip* short, arched, expanded, with two small tubercles in front, and a very slight umbilical depression behind it; obliquely and curvedly cut off by the canal. H. 1 in. B. 0·52. Penultimate whorl, height 0·2. Mouth, height 0·6, breadth 0·27.

This species is represented by one specimen, in poor condition. It is somewhat like the young, or even some of the elongated forms of *Murex* (*Pseudomurex*) *meyendorfii*, Calc.; but it is more attenuated, with a less-impressed suture, longer body-whorl, stronger and straighter ribs, and much more delicate spirals.

22. *Murex* (*Pseudomurex*) *fusulus*, Brocchi.

Murex fusulus, Brocchi, Conch. Foss. Subappen., 1st ed., p. 209, 2d ed. vol. ii. p. 199, pl. viii. fig. 9.
„ „ Defrance, Dict. sci. nat., vol. xlv. p. 544.
Murex spadæ, Libassi, Conch. Foss. Palerm., p. 43, pl. i. fig. 29.
Pseudomurex spadæ, Monterosato, Conch. Foss. Monte Pellegrino, &c., p. 33.
Murex fusulus, Bellardi, Moll. Terr. Terz. Piedmonte, &c., vol. i. p. 169, pl. xii. fig. 4.
Pseudomurex spadæ, Monterosato, Enumeraz., p. 42.
Murex pyrrhias, Watson, Prelim. Report, pt. 15, Journ. Linn. Soc. Lond., 1883, vol. xvi. p. 603.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores, 450 to 500 fathoms. Volcanic mud.

Habitat.—Madeira (my dredgings), Mediterranean; Corsica, Sardinia, Algeria, Palermo, 35 fathoms (Monterosato).

Fossil.—From the Upper Miocene of Northern Italy (Bellardi).

Shell.—Thinnish, white, oblong-fusiform, subscalar, with a moderate spire, a small chestnut-coloured tip, a short rounded base, and a small snout. *Sculpture:* Longitudinals—there are no varices; but somewhat narrow, rounded, tumid ribs, about 9 on each whorl, run continuously from the apex to the point, but become very slight on the base; their intervening furrows are broad, shallow, and rounded: the whole surface is scored by very small lamellæ, which rise in vaulted scales; in the minute interstices of these there are very slight puckerings. Spirals—there is an angulation about the middle of

the whorls, which on the last is slight; this angulation is marked on the earlier whorls by a spiral thread, which rises into a little knob on the ribs; on the last whorl the whole surface (except just below the suture) is covered with close-set, equal, irregular, rounded threads, on which the longitudinal lamellæ rise into vaulted scales; the point of the snout is a twisted cord scored with the old canal-scars. *Colour* yellowish dead-white, with a ruddy chestnut tip. *Spire* rather high, conical, subscalar. *Apex* chestnut, turbinated, small, blunt-pointed, consisting of 3½ rounded polished whorls, which end with a distinct, prominent, reverted, and sinuated edge. *Whorls* 8 to 9 in all; they are conical and shouldered above, angulated about the middle, below which they are cylindrical; the last is scarcely angulated, rather small, rounded, with a short contracted base produced into a small equal-sided snout, which is nicked at the point. *Suture* very slight, linear. *Mouth* oblong, pointed and channelled above, and still more below, where there is a rather broad, open, oblique canal. *Outer lip* scarcely patulous, well arched, thin on the edge; there is a slight varix within, and 5 very insignificant tubercles for teeth. *Inner lip* forms a continuous curve across the body and down the pillar, which is obliquely cut off in front; the labial callus is a little thickened at the top, and is narrow, with a well-defined edge; there are one or two feeble tubercles on it in front; behind the callus at the point is a very slight and superficial umbilical depression. H. 0·46 in. B. 0·25. Penultimate whorl, height 0·09. Mouth, height 0·26, breadth 0·11.

This is an inconspicuous little shell, somewhat more angular and conical than *Murex aciculatus*, Lam. The spire is not unlike that of *Murex edwardsii*, Payr.; but the last whorl is much smaller than in that species, and the whole sculpture is different and much more delicate.

I am indebted to Dr Gwyn Jeffreys for correcting my determination of this shell, which I had considered new. I have long had it from Madeira, and never having seen Brocchi's species, failed to recognise it in his figure, which is stumpy in form, and high and angularly shouldered; differing in this respect nearly as much from Dr Gwyn Jeffreys' fossil shell, as from my living Madeiran specimens, or the one got by the Challenger at the Azores. Careful examination, however, convinced me that Dr Gwyn Jeffreys' shell is the same as mine, and that they agree very well with Brocchi's description of *Murex fusulus*.

23. *Murex* (*Pseudomurex*) *aëdonius*,[1] n. sp. (Pl. XVII. fig. 5).

Station 135c. October 17, 1873. Lat. 37° 25′ 30″ S., long. 12° 28′ 30″ W. Nightingale Island, Tristan da Cunha. 100 to 150 fathoms.

Shell.—Strong, biconical, scalar, with a high spire, a small apex, and a short wedge-shaped, twisted, barely emarginated snout. *Sculpture:* Longitudinals—there are on each whorl about 8 broad, coarse, hunchy ribs, which extend from suture to suture, and whose

[1] ἀηδόνιος, belonging to a nightingale.

trend is strongly to the right; they die out on the base; the whole surface is scored with lamellæ in the lines of growth which rise in procumbent vaulted scales. Spirals—there are a great many narrow squarish threads parted by narrower furrows; in the latter the vaulted scales occasionally disappear; of the threads there are about 8 on the penultimate whorl. *Colour* somewhat ruddy. *Spire* high; scalar. *Apex* small, smooth. *Whorls* about 5, exclusive of the embryonic ones of the apex; they are rather short, broad, and convex. The last is a little tumid, with a concavely conical base, produced into a small, triangular, barely reverted snout. *Suture* oblique, irregular, and somewhat concealed in the angulation of the whorls. *Mouth* elongately pear-shaped, faintly angulated at the insertion of the outer lip. *Outer lip* patulous, very fully rounded from its insertion to the periphery of the shell, from which point it runs straight to the end. *Inner lip* patulous, direct, oblique, broad above, but narrowed away from the beginning of the open canal; from this point an umbilical chink opens between the inner lip edge and the cord formed by the old canal scar, and which twists round the end of the snout. H. 0·74 in. B. 0·43. Penultimate whorl, height 0·17. Mouth, height 0·35, breadth 0·2.

This species has some resemblance to *Fusus niveus*, A. Ad. (Proc. Zool. Soc. Lond., 1851, p. 270, no locality given); but that species is pure white, is much stumpier, and has a longer mouth and a much larger base. It vaguely recalls *Fusus* (?) *abnormis*, E. A. Smith (Proc. Zool. Soc. Lond., 1878, p. 811, pl. 50, fig. 10), from the Andamans, but the spire is much narrower in the Challenger shell, and the base much more contracted and pointed. It is perhaps as like the young of *Murex* (*Pseudomurex*) *lamellosus*, Phil., as anything; but it has a much smaller last whorl, with a more contracted base; the spire, too, is higher; the longitudinal ribs are much stronger, and the spiral threads are more equal.

2. *Typhis*, Montfort, 1810.

Typhis philippensis, Watson (Pl. X. fig. 4).

Typhis philippensis, Watson, Prelim. Report, pt. 15, Journ. Linn. Soc. Lond., vol. xvi. p. 605.

Station 161. April 1, 1874. Lat. 38° 22′ 30″ S., long. 144° 36′ 30″ E. Off the entrance to Port Philip, Melbourne. 33 fathoms. Sand.

Shell.—Thinnish, buff-coloured, oblong-fusiform, biconical, scalar, with a shortish spire, a papillary tip, variced and hollow-spined whorls, a contracted base, and a long, fine, reverted and dextrally bent, closed snout. *Sculpture:* Longitudinals—there are on each whorl about 9 ribs, which are alternately rounded and sharpish; the latter are varices, which on the last whorl run out to the point of the base; they bear 5 upturned and reverted, almost twisted, hollow spines, which are open in front; the intermediate ribs are very slight in themselves, but bear each at the periphery the straight tube of the genus (of which only the last opens through the shell), and below this, in the line of the suture's course, a prominent round-topped tubercle; the intervals are hollow and broader

than the ribs: the surface is scored with sharp lines of growth, which are much distorted by the spines. Spirals—there is an obscure angulation of the shell at the upper row of tubercles; there are faint microscopic scratches on the whole surface. *Colour* buff, with obscure dark-chocolate spots at the suture, the periphery, and toward the point of the base; the spines and mouth are whiter; there is a kind of chalky bloom on the surface. *Spire* rather short, conical, scalar. *Apex* pale, smooth, papillary, blunt, rather large, consisting of two rounded cylindrical whorls, divided by a deep and very oblique suture; just above the first mouth-edge is one of the hollow tubes of the genus. *Whorls* 6, of slow increase, angulated, with a flat horizontal shoulder above, below which they are cylindrical; the last is slightly tumid, feebly bicarinated, with a contracted conical base, which is produced into a broad flat snout, drawn out to the right into a long, fine, scarcely reverted straight tube. *Suture* very horizontal, much interrupted, slightly impressed at the bottom of the angle in which the whorls meet. *Mouth* very perfectly oval, slightly pointed in front, where there is a minute cleft in the prominent lip-edge; but beyond this the canal is entirely closed. *Outer lip* projects quite straight as a thin prominent edge considerably in advance of the last varix. *Inner lip* exactly similar to the outer lip, with which it is continuous above, and from which it is only separated below by the minute cleft of the canal; behind it is a strong furrow, bordered to the left on the body by one of the varices, and in front by the lines of vaulted spines of the old canal-ends. *Operculum* pointedly ovate, has a small, somewhat elongated, anterior terminal apex, and is scored across outside with curved, thin, imbricated, rather distant lamellæ. H. 0·72 in. (length of canal 0·3). B. 0·35. Penultimate whorl, height 0·08. Mouth, height (without the canal) 0·16.

This pretty little species is very like *Typhis cleryi*, Petit, from New Zealand; but in that the embryonic apex is finer and more prominent, the spire is higher, the base is more inflated, the whole last varix is much stronger, and on the base the varices have no hollow spines as in the Challenger species. *Typhis duplicatus*, Sow., has the embryonic apex very similar, but is higher and finer in the spire, has only three regular rows of hollow spines, and these do not extend to the base. *Murex cirrosus*, Hinds, is very like in form and general aspect, but has strong spiral threads on the whorls, is more contracted in the base, and has an open canal. Mr Edgar A. Smith had the kindness to compare for me the Challenger species with *Typhis yatesi*, Crosse; and writes:—"In your species the whorls are not so constricted at the base, and the tabulation or upper slope is oblique. In *Typhis yatesi* they are much constricted, and the tabulation is horizontal. The number of varices is the same; but the ornamentation of them is different. Crosse describes his 'peculiariter cristato-denticulatis,' whilst yours have hollow conical spines or hooks. The hollow tubes, too, in your shell are directed nearly at right angles to the axis; in *Typhis yatesi* they are obliquely upward-inclined. Beneath these in yours I see a small prominence, which is not present in the other. The type, however, is a very worn shell; and it is possible that in fine specimens these prominences might exist, and the varices be more spinous; but the shape of the whorls and the direction of the tubes would remain the same."

3. *Trophon*, Montfort, 1810.

Species.

1. *Trophon geversianus*, Pallas.
2. *Trophon albolabratus*, E. A. Smith.
3. *Trophon liratus*, Couth.
4. *Trophon acanthodes*, Wats.
5. *Trophon carduelis*, Wats.
6. *Trophon declinans*, Wats.
7. *Trophon aculeatus*, Wats.
8. *Trophon septus*, Wats.
9. *Trophon scolopax*, Wats.

1. *Trophon geversianus* (Pallas).

Buccinum geversianum, Pallas, Spicil., Zool., Fasc. 10, p. 33, pl. iii. fig. 1.
Chemnitz, Conch. Cab., vol. iv. p. 130, pl. cxxxix. fig. 1297.
Murex magellanicus, Gmelin, p. 3548, No. 80 (*excl. var. β*).
„ *magellanicus* and *Murex peruvianus*, Encyclop. méthod., vers., pl. cccexix. figs. 4, 5.
„ *lamellosus*, Dillwyn, vol. ii. fig. 730, No. 97.
„ *magellanicus*, Wood, Ind. Test., p. 132, pl. xxvi. fig. 90.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 171, and (ed. Desh.) vol. ix. p. 589, sp. 46 (note).
„ „ D'Orbigny, Amérique méridionale, vol. v. p. 451, No. 392.
„ *patagonicus*, D'Orbigny, Amérique méridionale, vol. v. p. 452, pl. lxii. figs. 2, 3, No. 393.
„ *varians*, D'Orbigny, Amérique méridionale, vol. v. p. 452, pl. lxii. figs. 4–7, No. 394.
Fusus geversianus, Reeve, Conch. Icon., vol. iv. pl. iv. fig. 2.
Trophon geversianus, Sowerby, Thes. Conch., pt. 35, p. 59, sp. 1, pl. cccciv. (i. *Gen.*) figs. 7, 8.
„ „ Kobelt in Conch. Cab. (ed. Küster), pp. 275, 305, sp. 1, pl. lxxii. figs. 1–3, and pl. lxxiii. fig. 1, and pl. lxxv. fig. 1, and pl. lxxvi. figs. 1, 2.
„ „ Tryon, Manual, vol. ii. p. 144, pl. xxxii. figs. 337–347, and pl. lxx. figs. 433, 435.

Station 151. February 7, 1874. Lat. 52° 59′ 30″ S., long. 73° 33′ 30″ E. Off Heard Island, S.E. of Kerguelen. 75 fathoms. Volcanic mud.

Station 315. January 26-28. Lat. 51° 40′ S., long. 57° 50′ W. Port William, Falkland Islands. 12 fathoms. Sand and gravel.

Habitat.—Straits of Magellan and the Falkland Islands.

This is a very variable species, whose limits must probably be widened. At the same time I have united to it the species from Station 151 with very great hesitation. This specimen approaches the variety *peruvianus*, Brug., but has the spire still higher and more exserted; the whorls are rounder, the whole sculpture is finer but more irregular; the shell is thinner, and is pure white outside and in. Than *Trophon albolabratus*, E. Sm., it is thinner, the spirals are more numerous and regular, the longitudinals are far fewer, the shell is broader, the whorls are of faster growth, the suture is more impressed, the mouth is more oblique, the lip is thinner and more reflected, and the canal is longer.

Operculum of *T. geversianus*, Pall.

I add here a figure of the operculum (taken from a Falkland Island specimen), in order to correct the very mistaken idea of its form and mode of growth suggested by Adams' figure (Genera, vol. iii. pl. viii. figs. 3 *b*, 3 *c*, *Trophon patagonicus*, Brug.) It is obvious that the general form is in the main that of the genus, which is pointed with the apex at the lower end, and that a faint subspiral turn comes in course of growth. This whole

form is recognisable only when the operculum is complete, which is rarely the case. In the process of growth the older part ceases to be closely adherent to the animal, and is then of course more liable to accident, with the result of such curious forms being produced as that figured by the Messrs Adams.

2. *Trophon albolabratus*, E. Smith.

Trophon albolabratus, E. Smith, Ann. and Mag. Nat. Hist., ser. iv., 1875, vol. xvi. p. 68.
" " E. Smith, Zool. Kerguelen, Phil. Trans. Roy. Soc. (separate impression, p. 4), pl. ix. fig. 2.
" " Studer, Fauna Kerguel., Archiv f. Naturgesch., Jahrg., xxxv. vol. i. p. 128, No. 23.
" " Kobelt in Conch. Cab. (ed. Küster), p. 307 (no fig.)
" " Sowerby, Thes. Conch., pts. 35, 36, p. 60, sp. 2, pl. ccccv. (ii. *Gen.*) fig. 29.
" *geversianus*, var. Tryon, Manual, vol. ii. p. 144, pl. lxx. fig. 435.

Station 149B. January 17, 1874. Lat. 49° 28′ S., long. 70° 30′ E. Off Royal Sound, Kerguelen. 25 fathoms. Volcanic mud.

Station 149C. January 19, 1874. Lat. 49° 32′ S., long. 70° E. Balfour Bay, Royal Sound. 60 fathoms. Volcanic mud.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound. 28 fathoms. Volcanic mud.

Habitat.—Kerguelen (Smith).

Whether this species be really distinct from that very variable form *Trophon geversianus* (Pallas) may be doubted; but no doubts are likely to get much help one way or other from such a course as that of Mr Tryon, who, having to deal with the careful work of one so competent as Mr E. A. Smith, summarily classes his new species under that of Pallas, though confessing he has never seen the Kerguelen species at all.

3. *Trophon liratus*, Couthouy (M.S.)

Trophon liratus (Couthouy), Gould, Otia, 1846, p. 64.
" " Gould, Bost. Soc. Proc., vol. iii. p. 141, 1849.
" " Gould, Moll. Expl. Exped., p. 231, pl. xvi. fig. 282.
" " Kobelt, Conch. Cab. (ed. Küster), p. 310, sp. 51 (no fig.)
" " Tryon, Manual, vol. ii. p. 143, pl. xxxi. fig. 333.

Station 308. January 5, 1876. Lat. 50° 8′ 30″ S., long. 74° 41′ W. W. Patagonia. 175 fathoms. Blue mud.

Station 315. January 26–28, 1876. Lat. 51° 40′ S., long. 57° 50′ W. Port William, Falkland Islands. 12 fathoms. Sand and gravel.

Habitat.—Falkland Islands (British Museum). Gould mentions that Couthouy's species was dredged in Puget Sound, Oregon.

This is not the *Euthria lirata*, Ad., nor the *Murex lyratus*, Gmelin (= *Buccinum lyratum*, Martyn), nor the *Murex lyratus*, Lam.

4. *Trophon acanthodes,*[1] Watson (Pl. X. fig. 6).

Trophon acanthodes, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 386.

Station 308. January 5, 1876. Lat. 50° 8′ 30″ S., long. 74° 41′ W. W. Patagonia. 175 fathoms. Blue mud.

Station 311. January 11, 1876. Lat. 52° 45′ 30″ S., long. 73° 46′ W. Western Patagonia. 245 fathoms. Blue mud. Bottom temperature 46°.

Shell.—Strongish, chalkily porcellanous, yellowish, fusiform, with a high scalar spire, small apex, sharply keeled and radiatingly spiked whorls, a rounded contracted base, and a long, narrow, but strong snout. *Sculpture:* Longitudinals—the surface is scored with close, very irregular lines, formed by the slightly raised edges of thin imbricated procumbent lamellæ, between which there are almost microscopic scratches in the lines of growth; there are 8 or 9 feeble oblique riblets on the lower part of the whorls, these die out on the base. Spirals—toward the upper part of each whorl there is an acute angulation with an expressed rounded keel, from which projects a coronal of longish rays, or pointed, upturned, retroverted vaulted spikes, each of which forms the origin of one of the longitudinal riblets; below this keel there are feeble, irregular, rounded threads, which may be recognised on the snout. The whole surface is covered with very fine, close-set, rounded threadlets. *Colour* yellowish, with a singularly harsh surface. *Spire* high, scalar. *Apex* mamillate, but small, consisting of nearly three smooth, cylindrical, embryonic whorls, of which the extreme tip is slightly immersed. *Whorls* 7 to 8 in all, flat above, sharply angulated, keeled and coronated, conically contracted to the lower suture; they are all small, but the last, which is a little tumid, with a rounded base, very much contracted and produced into a long, straight, spike-like snout. *Suture* sharp and deep, in the bottom of the broad depression between the keels. *Mouth* club-shaped, being rather small and oval above, and contracted below into the long, narrow, but patulous canal. *Outer lip* roundly arched, angulated at the keel, where the vaulted spikes present a canal; it is patulous below and down the whole anterior canal. *Inner lip* rounded above, where it expands on the body, joining the outer lip without any angulation; at the top of the canal it projects in a slight blunt tooth; from this point it becomes much narrower, and only the excessively narrow edge of the glaze can be recognised, almost hiding behind the long straight pillar. H. 1·5 in. B. (exclusive of the spines) 0·64. Penultimate whorl, height 0·22. Mouth, height, 1, breadth 0·32.

This species resembles *Trophon vaginatus,* Jan, but is much more tumid on the base, is more constricted at the anterior canal, has a straighter snout, a less contracted suture, and a lower spire.

[1] ἀκανθώδης, prickly.

5. *Trophon carduelis*,[1] Watson (Pl. X. fig. 7).

Trophon carduelis, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 387.

Station 164B. June 13, 1873. Lat. 34° 13′ S., long. 151° 38′ E. Off Sydney. 410 fathoms. Green mud.

Shell.—Thin, porcellanous white, fusiform, with a high scalar spire, very small apex, long, small snout, angulated whorls, scored by thin, sharp, procumbent lamellæ rising on the keel into high vaulted spikes. *Sculpture:* Longitudinals—there are on each whorl 9 or 10 thin, sharp, vaulted and procumbent lamellæ, the old lip-edges; they are pretty prominent, cross the whole whorls, are obliquely continuous from whorl to whorl, rise on the upper part of the whorls into hollow, vaulted, upturned, and reverted spikes, and are traceable to the point of the snout; between these lamellæ are slight lines of growth. Spirals—above the middle of each whorl there is an angulation, the effect of which is greatly increased by the coronal of spikes which project at this point; one or two very depressed rounded threads, parted by minute linear furrows, are also found on this angulation; similar but feebler and very irregular threads and furrows cover the rest of the surface. *Colour* porcellanous white, with a smooth but not polished surface. *Spire* high, scalar. *Apex* small, consisting of two smooth, rounded, globose, embryonic whorls, the extreme tip of which is very small and is slightly turned over and immersed. *Whorls* about 10, flatly sloping above, angulated and coronated, conically contracted to the lower suture; they are all small but the last, which is slightly tumid, with a rounded and shortly produced base prolonged into a projecting, narrow, slightly reverted snout, which is a little bent at the point. *Suture* small and sharp, interrupted by the lamellæ, but very strongly marked by the deep constriction of the whorls. *Mouth* club-shaped, being oval above and produced into the long narrow canal. *Outer lip* sharp and thin, leaves the body at a right angle, advances straight to the keel, where a patulous canal is formed in the spike; below this the lip is extremely patulous, and well arched to the origin of the canal, where the lip is sharply pinched-in, and from this point runs direct, but a little obliquely, to the point of the snout, where it is squarely cut off. *Inner lip* is a little concave above, straight on the pillar, slightly oblique down the canal; it is defined on the body and pillar by a thin, narrow, patulous pad; this pad crosses the pillar, and runs into the canal, along the side of which it shows only a thin sharp edge, with a small chink behind it. *Operculum* thin, yellow, ovate, acute, with a terminal apex, and corrugations and striæ in the curves of growth. H. 1·27 in. B. (spines included) 0·8, (excluded) 0·5. Penultimate whorl, height 0·19. Mouth, height 0·8, breadth 0·31.

[1] I have failed to approach the idea of "thistly" nearer than by this, the name of the Thistle-Finch, which really ought to have had the same latitude as its Greek equivalent ἀκανθίς. The prickles on this species of *Trophon* recall strongly those of the involucre of some thistles.

This is a species beautiful in form and in texture. With some superficial resemblance, it differs from *Trophon acanthodes*, Wats., in its continuous longitudinal lamellæ, the thinness of its shell, the delicacy of its surface-texture, and the form of the base. In the latter respects it recalls *Trophon vaginatus*, Jan; but, than that species, it is less carinated, has a more contracted shorter base, a finer snout, and the spines are much more distinctly connected with the continuous lamellæ. *Trophon coronatus*, H. and A. Ad., a New Zealand form, and which extremely resembles *Trophon goodridgii*, For., has a much longer canal, a more tumid body, more numerous varices, with shorter spines, not rising, as here, in a coronal round the spire. *Trophon laciniatus*, Martyn, from Vancouver's Island, presents a variety slightly resembling the Challenger species; but the snout is much shorter, the base more produced; the spines, too, are very much shorter, and, rising near the suture, project upwards parallel to the spire.

6. *Trophon declinans*, Watson (Pl. X. fig. 10).

Trophon declinans, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 388.

Station 144A. December 26, 1873. Lat. 46° 48′ S., long. 37° 49′ 30″ E. Off Marion Island. 69 fathoms. Volcanic sand.

Station 150. February 2, 1873. Lat. 52° 4′ S., long. 71° 22′ E. Between Kerguelen and Heard Islands. 150 fathoms. Coarse gravel. Bottom temperature 35·2°.

Shell.—Thin, chalky white with a tinge of buff, fusiform, with a high subscalar spire, small mamillary apex, long small snout, rounded whorls scored by thin procumbent lamellæ. *Sculpture:* Longitudinals—there are on the later whorls from 15 to 20 procumbent lamellæ, between these are slight lines of growth. Spirals—there are a few quite irregular and obsolete rounded threads. *Colour* chalky white with a tinge of buff. *Spire* high, subscalar. *Apex* small, consisting of barely two smooth, globose, embryonic whorls, of which the extreme tip is slightly turned down on one side and immersed. *Whorls* 7, slightly flattened above, convexly cylindrical below, with a very slight contraction above the suture; the last is a little tumid, with a produced conical base running out into a long, small, twisted, and upturned snout. *Suture* slightly impressed, oblique. *Mouth* oval, bluntly pointed above, drawn out into the long, narrow, and oblique canal in front. *Outer lip* thin, arched, slightly reverted and patulous; very obliquely cut off and emarginated at the point of the canal. *Inner lip* very concave above, convex at the entrance to the canal, from which it runs with a twist and very obliquely to the left; the labial glaze is thin and somewhat indefinite. H. 0·8 in. B. 0·32. Penultimate whorl, height, 0·17. Mouth, height 0·43, breadth 0·2.

I have described this as a new species with very great reluctance. My own opinion is that it is a large thin variety of *Trophon truncatus*, Ström; and that opinion is shared by Mr E. A. Smith. Dr Gwyn Jeffreys, however, and Professor G. O. Sars decidedly hold it as distinct; and their extensive acquaintance with the large northern variety of *Trophon truncatus* makes their judgment

of great weight. Along with the specimen of this species which I submitted to Professor Sars I forwarded another shell, sadly broken, which I consider different and new, and have named *Trophon auditus*, from Station 150, and which I sent thinking it might be his *Trophon clavatus*. Professor Sars's own letter will best convey his opinion regarding both of these forms:—"I have examined your shells very closely; they show a very perplexing similarity in form and sculpture to northern Trophons. . . . The one specimen is certainly very nearly related to *Trophon truncatus*, Ström; but still I find, on comparing it with Norwegian specimens of the species, some differences. Thus, the shell, though larger, is less solid, and the longitudinal ribs are also somewhat different both in number and in form; in all my specimens of *Trophon truncatus* they are distinctly lamellar and reflexed; but in your specimen they have more the appearance of simple sharp folds or keels.[1] The other specimen somewhat resembles my *Trophon clavatus*—thus far at least, that the ribs are produced in similar tooth-like protuberances; but the ribs are more numerous, the spire somewhat more elongated, and the form of the '*cauda*' cannot be ascertained. After all, I must consider your specimens distinct from Northern forms. But, on the other hand, I should not be unwilling to regard both specimens as belonging to one species, and thus mere varieties analogous to the forms *Trophon clathratus* and *gunneri*. Your specimens from Kerguelen are in any case very interesting as representing, even if not in my opinion an identical, yet at least a very similar and strictly representative form of *Trophon* belonging to the Southern hemisphere."

7. *Trophon aculeatus*, Watson (Pl. X. fig. 9).

Trophon aculeatus, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 390.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Small, thin, porcellanous white, fusiform, with a high scalar spire, a blunt, mamillate, one-sided apex, a short conical base, a long small snout, and angulated whorls crossed by continuous thin, vaulted lamellæ, projecting on the angulation of the whorls into small sharp points. *Sculpture:* Longitudinals—there are on each whorl about 12 vaulted lamellæ, which run continuously from below the apex to the snout; between these are a few fine lines of growth. Spirals—an angulation, strongly marked by the projecting points of the longitudinal lamellæ, is in the middle of the whorls. *Colour* porcellanous white. *Spire* high, scalar. *Apex* small, blunt, mamillate, with the extreme tip very much turned down on one side; the $1\frac{3}{4}$ embryonic whorls are tumid, rounded, and smooth. *Whorls* 6 to 7, with a straight declining shoulder, angulated in the middle and conically contracted below; the conical base is produced into a narrow longish snout. *Suture* deep and angular. *Mouth* club-shaped, being angulated above, and produced into the long narrow canal below. *Outer lip* sharp, thin, and patulous on the edge; it leaves

[1] I do not admit the distinction which Professor Sars here makes. I consider the longitudinal ribs in *Trophon declinans* to be quite as certainly procumbent lamellæ; only this feature is somewhat obscured by their being much chipped.—R. B. W.

the body at a right angle, and is right-angled at the keel. *Inner lip* is slightly concave above, straight on the very short pillar, and oblique down the edge of the long canal; a thin narrow glaze lies on the edge of the body and pillar, at the point of which it crosses and lies hidden behind the sharp canal-edge. H. 0·45 in. B. 0·2. Penultimate whorl, height 0·08. Mouth, height 0·28, breadth 0·09.

This pretty little species perhaps resembles *Trophon barvicensis*, Johnston, more than any other, but, besides being more attenuated, is markedly differentiated by the median angulation of the whorls and the absence of the spiral threads of that species.

8. *Trophon septus*, Watson (Pl. X. fig. 11).

Trophon septus, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 391.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Shell.—Thin, porcellanous white, club-shaped, with a low scalar spire, blunt apex, high-shouldered sharply expressly and spinously keeled whorls, a tumid body, and a long thin flexuous snout. *Sculpture:* Longitudinals—the whorls are scored by feeble lamellæ and by coarsish lines of growth. Spirals—at the top of each whorl, but separated from the suture by a broad tabulation, is a right-angled keel, from which, nearly parallel to the axis of the shell, project a series of hollow, vaulted, compressed triangular spines;[1] besides this coronal there is no other spiral sculpture except some irregular lines on the base. *Colour* porcellanous white, with some chalkiness on the surface. *Apex* rather small, mamillate, and a little turned down on one side. *Whorls* 5 or 6, flatly tabulated above, with a rectangular keel, below which they are cylindrical; the last is a little tumid on the base, which contracts rapidly and is drawn out into a long, thin, flexuous snout. *Suture* almost rectangular. *Mouth* round, with a blunt angle at the top and a siphon at the keel, and suddenly prolonged into the narrow canal. *Outer lip* sharp, thin, direct, well arched, not prominent. *Inner lip* is concave above, slightly oblique on the very short pillar, and much more so on the long, bent, and slightly reverted snout; a thin narrow glaze defines it to the point of the pillar, where it crosses to the canal, leaving a minute chink on its outer edge above. *Operculum* thin, yellow, oval, with a blunt apex, where the nucleus is terminal. H. 0·91 in. B. 0·43. Penultimate whorl, height 0·1. Mouth, height 0·67, breadth 0·16.

The upturned coronal of hollow spines and the more contracted base differentiate this from *Trophon goodridgii*, Forbes. It has some faint resemblance to the *Pleurotoma cedo-nulli*, Reeve.

[1] These form a sort of fence—whence the name.

9. *Trophon scolopax*, Watson (Pl. X. fig. 12).

Trophon scolopax, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 392.

Station 150. February 2, 1874. Lat. 52° 4′ S., long. 71° 22′ E. Between Kerguelen and Heard Islands. 150 fathoms. Coarse gravel. Bottom temperature 35·2°.

Shell.—Thin, chalkily porcellanous white, club-shaped, with a low, scalar, small-pointed spire, high-shouldered, right-angled whorls on which are some small prickles, a tumid body, and a long, thin, straight snout. *Sculpture:* Longitudinals—the whorls are crossed by feeble, procumbent, almost appressed lamellæ, between which are a few rounded lines of growth. Spirals—near the top of each whorl, but separated from the suture by a broad, rounded, but hardly declining shoulder, is a rectangular keel; below this, and widely apart, there are on the body-whorl three feeble rounded threads; on these, as on the keel, the longitudinal lamellæ rise into small, blunt, vaulted scales. The whole surface of the shell is covered with submicroscopic scratches. *Colour* porcellanous under a thin chalky surface. *Apex* small, but too much eroded for description. *Whorls* 6 to 7 (?) roundly tabulated above, with a sub-rectangular keel, below which they are cylindrical; the last is a little tumid, rounded and rapidly contracted on the base, which is produced into a long, thin, straight snout. *Suture* almost rectangular. *Mouth* almost round above, and entirely without angles, funnel-shaped below, where it is drawn out into the long narrow canal. *Outer lip* sharp, thin, well arched, direct till near the canal, where it is very patulous. *Inner lip* concave above, and then quite straight to the point of the shell; a very thin and narrow glaze covers the body to the beginning of the canal. *Operculum* small, thin, yellow, oval, with a terminal but slightly inturned nucleus. H. 0·95 in. B. 0·42. Penultimate whorl, height 0·12. Mouth, height 0·7, breadth 0·2.

I have named this species from some likeness it has to a woodcock's head. It resembles *Trophon goodridgii*, Forbes, but has the body smaller and squarer, the base more contracted, the canal much longer and finer, and the whorls are tabulated below the suture. It is larger than *Trophon septus*, the snout is straighter, and the whole ornamentation is different.

Family Purpuracea, Lamarck, 1809.

Genera. 1. *Purpura*, Brug. 2. *Rapana*, Schum. 3. *Vitularia*, Swainson.

1. *Purpura*, Bruguière, 1789.

Species.

1. *Purpura* (*Cronia*) *amygdala*, Kiener.
2. *Purpura* (*Thalessa*) *alveolata*, Reeve.
3. *Purpura* (*Thalessa*) *pica*, Blainville.
4. *Purpura* (*Stramonita*) *fasciata*, Reeve.
5. *Purpura* (*Polytropa*) *scobina*, Q. and G.

1. *Purpura* (*Cronia*) *amygdala*, Kiener.

Purpura amygdala, Kiener, Iconographie, p. 39, sp. 9, pl. x. fig. 26.
Buccinum „ Reeve, Conch. Icon., vol. iii. pl. viii. fig. 60.
Purpura (*Cronia*) *amygdala*, Chenu, Manuel, vol. i. p. 167, f. 807.
„ „ „ Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 191, sp. 32.
„ „ „ Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc., New South Wales, 1877, vol. i. p. 200, No. 4.
„ „ „ Tryon, Manual, vol. ii. p. 179, pl. lv. fig. 174.
„ „ „ E. A. Smith, "Alert" Collections, p. 51, No. 35.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
September 8, 1874. Cape York, off Albany Island, Torres Straits. 3 to 12 fathoms.

Habitat.—Port Jackson (Angas), North-East and East Australia (Brazier).

2. *Purpura* (*Thalessa*) *alveolata*, Reeve.

Purpura alveolata, Reeve, Conch. Icon., vol. iii. pl. xi. fig. 60 (not of Kiener).
„ „ Küster, Conch. Cab. (ed. Küster), p. 187, sp. 96, pl. xxxi*a*. fig. 2.
Purpura clavigera, Küster, Conch. Cab. (ed. Küster), p. 186, sp. 95, pl. xxxi*a*. fig. 1.
„ „ Lischke, Japan. Moll., vol. i. p. 54, pl. v. figs. 12–14; vol. ii. p. 39.
„ *alveolata*, E. A. Smith, Japan. Moll., Ann. and Mag. Nat. Hist., ser. iv., 1875, p. 424, No. 37.
„ „ E. A. Smith, Proc. Zool. Soc. Lond., 1879, p. 213, No. 78.
„ *hippocostaneum*, var., Tryon, Manual, vol. ii. p. 162, pl. xlv. fig. 40.

May 14, 1875. Oosima, Japan.

Habitat.—Panama[1] (Reeve), Japan and Formosa (British Museum—E. A. Smith).

I have given the reference to *Purpura clavigera*, on the authority of Mr Smith (*loc. cit.*), who is obviously right. The *Purpura alveolata*, Kiener (see Iconog., p. 42, pl. xlix. fig. 23), is plainly a quite different species.

3. *Purpura pica*, Blainville. (See Appendix, No. 5.)

4. *Purpura* (*Stramonita*) *fasciata*, Reeve.

Purpura fasciata, Reeve, Conch. Icon., 1846, vol. iii. pl. ix. fig. 45.
„ „ Küster, Conch. Cab., p. 132, sp. 37, pl. xxiii. figs. 6, 7.
„ (*Stramonita*) *hæmastoma*, var., Tryon, Manual, vol. ii. p. 167, pl. l. fig. 90.

March or April, 1876. Ascension Island. Shore.

Habitat.—Unknown (Reeve). None is marked in the British Museum. Antilles (Küster).

The species which Dunker published in 1856 (Proc. Zool. Soc. Lond., p. 357), under this name, is not that of Reeve.

[1] This is evidently a mistake. It is not given either in C. B. Adams' or in Carpenter's Panama list.

5. *Purpura* (*Polytropa*) *scobina*, Quoy and Gaimard (var. *albomarginata*, Desh.)

Purpura scobina, Quoy and Gaimard, "Astrolabe" (Zool.), vol. ii. pl. xxxviii. figs. 12, 13.
„ *albomarginata*, Deshayes, Mag. de zool., 1841, No. 13, pl. xliv.
„ *scobina*, Kiener, Iconog., pp. 113, 119, sp. 75, pl. xxxv. fig. 83.
„ „ Lamarck, Anim. s. vert. (ed. Desh.), vol. x. p. 113, sp. 80.
„ „ Küster, Conch. Cab. (ed. Küster), p. 155, sp. 59, pl. xxva. figs. 10, 11.
„ (*Polytropa*) *scobina*, Tryon, Manual, vol. ii. p. 170, pl. li. figs. 112, 121–124, pl. lii. figs. 126–130, 132, 133.
Polytropa scobina, Hutton, Manual New Zealand Moll., p. 57.

June 26, 1874. D'Urville Island, New Zealand. Beach.

Habitat.—New Zealand (Quoy and Gaimard).

The variety is described as a new species, by Deshayes, in the Magasin de Zoologie (*loc. cit.*), where it is admirably figured. It is smooth instead of being strongly and muricately lirate, and has the spire lower. The *Purpura scobina*, Reeve, is not this species, but is the *Purpura harpa*, Conrad.

2. *Rapana*, Schumacher, 1817.

Rapana bulbosa, Solander.

Rapana bulbosa, Solander MS.
Martini, Conch. Cab., vol. iii. p. 34, pl. lxviii. figs. 750–753.
Murex rapa, Gmelin, p. 3545, No. 68 (but not of Linne).
Buccinum bulbosum, Dillwyn, vol. ii. p. 631, No. 104.
„ „ Wood, Ind. Test., p. 117, pl. xxiii. fig. 105.
Pyrula rapa, Schubert and Wagner, Conch. Cab., vol. xii. p. 97, pl. ccxxvi. figs. 4016, 4017.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 144, and (ed. Desh.) vol. ix. p. 515, sp. 17.
„ „ Deshayes, Encyclopédie méthod., vers., vol. iii. p. 868, sp. 10, pl. ccccxxxiv. fig. 1.
Pyrula bulbosa, Reeve, Conch. Syst., vol. ii. p. 190, pl. ccxxxvi. fig. 3.
Pyrula rapa, Kiener, Iconographie, p. 23, sp. 15, pl. vii. fig. 1.
Pyrula bulbosa, Reeve, Conch. Icon., vol. iv. pl. iv. fig. 14.
Rapana „ Tryon, Manual, vol. ii. p. 203, pl. lxiii. fig. 336.

Station 208. January 17, 1875. Lat. 11° 37′ N., long. 123° 31′ E. Philippines. 18 fathoms. Blue mud.

Habitat.—China, Japan, Philippines.

3. *Vitularia*, Swainson, 1840.

Vitularia crenifera (Montrouzier).

Murex crenifera, Montrouzier, Journ. de conch., vol. ix. 1861, p. 279, pl. xi. figs. 9, 10.
Vitularia crenifera, Kobelt, Jahrb. d. deutsch. malak. Gesellsch., 1877, p. 253, sp. 3.

March 7, 1875. Admiralty Islands, North of Papua. 16 to 25 fathoms.

Habitat.—New Caledonia (Montrouzier).

The Challenger specimen so much more resembles the original description and figure, than any other specimens I have seen, that doubts the latter had awakened have been quite set at rest.

Family NASSINÆ, Swainson, 1840.

Genera. 1. *Nassa*, Desh. 2. *Bullia*, Gray.

1. *Nassa*, Deshayes, 1844.

Species.

1. *Nassa agapeta*, Wats.
2. *Nassa dissimilis*, n. sp.
3. *Nassa* (*Niotha*) *gemmulata*, Lam.
4. *Nassa* (*Niotha*) *pauperata*, Lam.
5. *Nassa* (*Niotha*) *ravida*, A. Ad.
6. *Nassa* (*Niotha*) *siquijorensis*, A. Ad.
7. *Nassa* (*Niotha*) *sordida*, A. Ad.
8. *Nassa* (*Niotha*) *stigmaria*, A. Ad.
9. *Nassa* (*Arcularia*) *granifera*, Kien.
10. *Nassa* (*Alectryon*) *glans*, Linne.
11. *Nassa* (*Alectryon*) *psila*, Wats.
12. *Nassa* (*Alectryon*) *monile*, Kien.
13. *Nassa* (*Zeuxis*) *algida*, Reeve.
14. *Nassa* (*Zeuxis*) *canaliculata*, Lam.
15. *Nassa* (*Zeuxis*) *levukensis*, Wats.
16. *Nassa* (*Zeuxis*) *crenulata*, Brug.
17. *Nassa* (*Cæsia*) *limata*, Chem.
18. *Nassa* (*Hebra*) *echinata*, A. Ad.
19. *Nassa* (*Hebra*) *muricata*, Q. and G.
20. *Nassa* (*Aciculina*) *babylonica*, Wats.
21. *Nassa* (*Hima*) *paupera*, Gould.
22. *Nassa* (*Hima*) *capillaris*, Wats.
23. *Nassa* (*Hima*) *ephamilla*, Wats.
24. *Nassa* (*Tritia*) *brychia*, Wats.

1. *Nassa agapeta*,[1] Watson (Pl. XI. fig. 6).

Nassa agapeta, Watson, Prelim. Report, pt. 13, Journ. Linn. Soc. Lond., vol. xvi. p. 367, No. 5.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Shell.—Small, thin, translucent, ovate, with a short spire, a small conical rather abrupt apex, an impressed suture, a rounded rather tumid base, and a largish snout. *Sculpture:* Longitudinals—there are smooth, rounded, narrow, sinuous ribs, parted by shallow rounded furrows of double their width; they originate in a row of largish tubercles close to the suture, are somewhat irregularly continuous from whorl to whorl, and die out at the extreme point of the base; the last forms a large white varix a little remote from the lip-edge. Spirals—there is a continuous thread of largish tubercles close below the suture, with a strongish furrow on its under side; the interstices of the ribs are scored by narrow furrows and flat threads, which latter on the base rise into small tubercles in crossing the ribs: there is no special furrow round the base of the pillar, which is

[1] ἀγαπητός, beloved.

scored with fine close-set threads up to the sharp-topped swelling continuous with the canal; the small point beyond this swelling has 3 or 4 coarser irregular threads and furrows. *Colour* faintly yellow, with traces of a sutural, median, and basal band of brown. *Spire* stumpy, conical. *Apex* a short, broad, blunt cone of $3\frac{1}{2}$ whorls, the two last of which are sharply keeled; the union-line of this embryo to the first regular whorl has a deep round sinus with a blunt brown-stained lip. *Whorls* 7, slightly convex, conical, beaded round the top; the last whorl is large compared with the others, is a little elongated, and has a rounded base produced into a snout, which is broadish and somewhat larger than is usual in the genus. *Suture* impressed. *Mouth* oval, pointed above, and continued below into the large oblique funnel-mouthed canal. *Outer lip* thin and sharp in front of the labral varix, straight above, arched and patulous below, with about 12 long little teeth within; it does not form a flange round the very patulous canal-mouth. *Inner lip* concave, with a broad, thick labial glaze, behind the prominent round edge of which is a minute chink; on this glaze there is one large long tooth near the upper corner of the mouth, some 2 or 3 small round tubercles on the body, and 4 larger ones on the very short pillar, whose point is flanged, twisted, and very abruptly cut off. H. 0·24 in. B. 0·12. Penultimate whorl, 0·05. Mouth, height 0·13, breadth 0·07.

This dainty little species, with some very obvious superficial differences, closely approaches *Nassa pusio*, A. Ad.; but the embryonic apex has half a whorl fewer, and the sculpture and form are really different. In particular, the pillar is not isolated by a strong basal furrow, and the spiral furrows on the base, though strong, have nothing like the depth they have in that species; nor has the pillar in that the little teeth which are very marked in the Challenger species. Marrat in his monograph on the Varieties in *Nassa*, p. 97, No. 1337, places it between *Nassa splendidula*, Dunker, and *Nassa trinodosa*, E. A. Sm.

2. *Nassa dissimilis*,[1] n. sp. (Pl. XVII. fig. 6).

Station 168. July 8, 1874. Lat. 40° 28′ S., long. 177° 43′ E. Off New Zealand. 1100 fathoms. Blue mud. Bottom temperature 37°·2.

Shell.—Thin, very stumpy, with a short broad body whorl, short rounded base, short conical subscalar spire; a very short, gibbously rounded mouth, and an excessively short pillar. *Sculpture:* there are frequent feeble riblets at irregular distances which are dotted with small round tubercles; the shallow parting furrows are broadish, and are scored with strongish lines of growth. Spirals—the tubercles on the riblets, though unconnected, are yet arranged in rows, of which there are 5 or 6 on the body whorl; below these, on the base, are 5 feeble distant threads; the scar of the old canal twines round the pillar and occupies its whole length; the upper edge of this scar is keeled with a sharp thread, above

[1] So called from its unlikeness to others of the genus.

which lies a furrow. *Colour* white. *Spire* low and stumpy, and subscalar. *Apex* broken. *Whorls:* there are $4\frac{3}{4}$ remaining; they are short, broad, and convex; the last is a little tumid, with a short rounded base. *Mouth* direct, small, round. *Outer lip* regularly curved; the canal, with reverted lip, is very oblique, lies in front of the pillar point, and comes short of the prominence of the basal lip. *Inner lip* is flat across the body, and advances there very little; at the base of the pillar it is flatly concave; the pillar is excessively short, and its extreme point does not project beyond the canal edge and the bottom of the canal, these two being, in consequence of the obliquity of the canal, at the same level. H. 0·54 in. B. 0·36. Penultimate whorl 0·14. Mouth, height 0·29, breadth 0·17.

I know no Nassa which approaches this in the shortness of its pillar and the shallowness and obliquity of its canal. In general form and sculpture it recalls *Nassa ventricosa*, Bellardi, or some of the other allied fossil forms from the Upper Miocene of Piedmont. *Nassa perpinguis*, Hinds, with which Bellardi compares that species, is very much longer, with stronger and more oblique sculpture, than the Challenger form. Our species is unfortunately in the worst possible condition.

3. *Nassa* (*Niotha*) *gemmulata* (Lamarck).

Chemnitz, Conch. Cab., vol. x. p. 201, pl. cliv. fig. 1474.
Buccinum gemmulatum, Lamarck, Anim. s. vert., vol. vii. p. 271, and (ed. Desh.) vol. x. p. 169, No. 26 (sec. *Nasses*).
Nassa gemmulata, Deshayes, Encycl. méthod., vers., pl. cccxciv. fig. 5.
Buccinum gemmulatum, Reeve, Conch. Syst., vol. ii. p. 237, pl. cclxix. fig. 4.
" " Wood, Ind. Test., p. 118, pl. xxiii. fig. 114.
" " Kiener, Iconog., p. 85, sp. 84, pl. xxii. fig. 84.
" " Küster, Conch. Cab. (ed. Küster), p. 10, sp. 11, pl. iii. figs. 10, 11.
" " Eydoux and Souleyet, Bonite, No. 205, pl. xli. figs. 11–13.
Nassa gemmulata, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 95, sp. 12.
" " Issel, Malak. Mar. Rosso, p. 124, No. 247.
" " Reeve, Conch. Icon., vol. viii. pl. v. fig. 29.
" " Lischke, Jap. Meer. Conch., vol. iii. p. 36.
" (*Niotha*) *gemmulata*, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 178, No. 38.
" " " Tryon, Manual, vol. iv. p. 55, pl. xvii. figs. 312–315.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, off south-west point of Papua. 28 fathoms. Green mud.

Habitat.—Philippines (Reeve), North and North-East Australia to 30 fathoms (Brazier), Japan (Lischke), Red Sea (Issel).

4. *Nassa* (*Niotha*) *pauperata* (Lamarck).

Buccinum pauperatum, Lamarck, Anim. s. vert., vol. vii. p. 278, and (ed. Desh.) vol. x. p. 183, sp. 56.
" " Kiener, Iconographie, p. 90, sp. 89, pl. xxix. fig. 118.

Nassa pauperata, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 95, sp. 9.
„ „ Reeve, Conch. Icon., vol. viii. pl. v. fig. 27.
„ (*Niotha*) *pauperata*, Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 163, No. 40.
„ „ „ Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 190, No. 24.
„ „ „ Tryon, Manual, vol. iv. p. 52, pl. xvi. figs. 288–291.

Station 161. April 1, 1874. Lat. 38° 22′ 30″ S., long. 144° 36′ 30″ E. Off entrance to Port Philip, Melbourne. 33 fathoms. Sand.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

April 17, 18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

April 23, 1874. Port Jackson, Sydney. 6 to 15 fathoms.

Station 163B. June 3, 1874. Lat. 33° 51′ 15″ S., long. 151° 22′ 15″ E. Port Jackson, Sydney. 30 to 35 fathoms. Hard ground.

Habitat.—South Australia, Port Jackson, and Tasmania (Angas).

I have no doubt that these specimens belong to *Nassa munieriana*, Crosse (Journ. Conch., 1864, vol. xii. p. 345, pl. xiii. fig. 6), but after very careful study I found it impossible to separate this form from Lamarck's species, of which I regard it as only a depauperated variety.

5. *Nassa* (*Niotha*) *ravida*, A. Adams.

Nassa ravida, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 97, sp. 38 (*N. ranida*).
„ „ Reeve, Conch. Icon., vol. viii. pl. xi. fig. 68.
„ (*Niotha*) *ravida*, H. and A. Adams, Genera, vol. i. p. 117.
„ „ „ Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 179, No. 42.
„ „ *splendidula* var., Tryon, Manual, vol. iv. p. 52, pl. xvi. fig. 286.

October 6, 1874. Amboina. 15 to 25 fathoms.

Habitat.—Philippines, Burias (Adams), Torres Straits, 20 fathoms (Brazier).

The Challenger specimens, which are unusually large, and have the pillar long, present a curious combination of the features of *Nassa* and *Phos*. They have not the strong longitudinal ribs, nor, on the subembryonic whorls, the oblique ribs of a *Phos*, but they have the sinus of the outer lip and the projection of the anterior canal of that genus, united with the columellar callus and teeth of a *Nassa*, and they have a posterior canal stronger than is usual in either genus.

Mr Marrat considers that they should be classed under *Nassa crenellifera*, A. Ad., but Mr E. A. Smith very decidedly agrees in the view I formed of their place.

6. *Nassa* (*Niotha*) *siquijorensis*, A. Adams.

Nassa siquijorensis, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 97, sp. 33.
„ „ Reeve, Conch. Icon., vol. viii. pl. viii. fig. 53.
„ (*Niotha*) *siquijorensis*, Tryon, Manual, vol. iv. p. 30, pl. ix. figs. 72, 73.

Station 233. May 17, 1875. Lat. 34° 39′ N., long. 135° 14′ E. Off Kobé, Japan. 8 to 14 fathoms. Mud.

Habitat.—Philippines, Siquijor (Adams).

7. *Nassa* (*Niotha*) *sordida*, A. Adams.

Nassa sordida, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 97, sp. 39.
„ „ Reeve, Conch. Icon., vol. viii. pl. xv. fig. 96.
„ (*Niotha*) *sordida*, Tryon, Manual, vol. iv. p. 52, pl. xvi. fig. 292.

September 18, 1874. Arrou Islands, west of Papua.

Habitat.—Siquijor in Philippines (Adams).

Mr Marrat, whom I consulted regarding this form, considers it a small *Nassa ravida*, A. Ad. Mr E. A. Smith, whom I also consulted, agrees with neither of us, and regards it as a form of *Nassa stigmaria*, A. Ad. In these circumstances, with much doubt I have retained the name I had myself attached to the Challenger specimens.

8. *Nassa* (*Niotha*) *stigmaria*, A. Adams.

Nassa stigmaria, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 96, sp. 32.
„ *stigmataria*, H. and A. Adams, Genera, vol. i. p. 117.
„ *stigmaria*, Reeve, Conch. Icon., vol. viii. pl. vii. fig. 42.
„ „ E. A. Smith, Andaman Shells, Proc. Zool. Soc. Lond., 1878, p. 808, No. 21.
„ (*Niotha*) *stigmaria*, Tryon, Manual, vol. iv. p. 54, pl. xvi. figs. 308–310.

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ W. Nukalofa, Tongatabu. Inside the reef. 18 fathoms. Coral mud.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Philippines (Adams), Andaman Islands (E. A. Smith), the island of Siquijor, and Japan (British Museum).

The specimen from Station 172 is in very bad condition, being, in fact, only a fragment; but is, I believe, this species.

9. *Nassa* (*Arcularia*) *granifera* (Kiener).

Buccinum graniferum, Kiener, Iconographie, p. 100, No. 98, pl. xxvii. fig. 111.
„ „ Lamarck, Anim. s. vert. (ed. Desh.), vol. x. p. 196, sp. 74.
Nassa (*Eione*) *granifera*, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 101, sp. 3.
„ *granifera*, Reeve, Conch. Icon., vol. viii. pl. xi. fig. 72.
„ (*Arcularia*) *granifera*, Tryon, Manual, vol. iv. pl. viii. figs. 39–41.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Tahiti (British Museum), Indian Ocean (Geneva Museum Coll., Delessert).

10. *Nassa* (*Alectryon*) *glans* (Linne), var. *suturalis* (Lamarck).

Buccinum glans, Linne, Syst. Nat. (12th ed.), p. 1200, No. 456.
Chemnitz, Conch. Cab., vol. iv. p. 60, pl. cxxv. figs. 1196–1200.
„ *lineatum*, Martyn, Univ. Conch., No. 34, pl. iii. fig. 84.
„ *glans*, Bruguière, Encycl. méthod., vers., vol. i. p. 269, sp. 34, pl. cccc. fig. 5.
„ *suturale*, Lamarck, Anim. s. vert., vol. vii. p. 269, and (ed. Desh.) vol. x. p. 166, sp. 21 (sec. *Nasses*).
„ *glans*, Dillwyn, Cat., vol. ii. p. 601, sp. 37.
„ „ Wood, Ind. Test., p. 113, pl. xxii. fig. 38.
„ *suturale*, Kiener, p. 55, sp. 54, pl. xxiv. fig. 96.
Nassa suturalis, Adams, Proc. Zool. Soc. Lond., 1851, p. 104, sp. 2.
„ „ Reeve, Conch. Icon., vol. viii. pl. i. fig. 4.
Buccinum suturale, Küster in Conch. Cab. (ed. Küster), p. 20, sp. 23, pl. v. figs. 4, 5.
Nassa glans, Hanley, Ipsa Linn. Conch., pp. 248, 512.
„ (*Alectrion*) *intermedia*, v. Frauenfeld, Moll. d. Novara, p. 5, pl. i. fig. 2.
„ (*Alectryon*) *suturalis*, v. Martens, Moll. Mauritius, &c., p. 242.
„ „ „ Tryon, Manual, vol. iv. p. 27, pl. viii. figs. 45–49, 52–54.

April 17, 18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Philippines (Adams), Mauritius, Ceylon, Nicobars, Malay Peninsula (v. Martens).

This is the small var. *suturalis*, Lam., sp., which, after Kiener's judicious estimate (*loc. cit.*), it is a pity to perpetuate as distinct.

11. *Nassa* (*Alectryon*) *psila*,[1] Watson (Pl. XI. fig. 4).

Nassa psila, Watson, Prelim. Report, pt. 13, Journ. Linn. Soc. Lond., vol. xvi. p. 364.

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Off Raine Island, Torres Strait. 155 fathoms. Coral sand.

Shell.—Very thin, glassy, polished, white, with some brown stains; conical, scarcely oblique, with a high scalar spire, a small blunt apex, a short truncate base, a sharply flanged canal, and a very small snout. *Sculpture:* Longitudinals—the earlier whorls are crossed by numerous regular fine riblets parted by very similar furrows; they are straight, but incline a little obliquely to the left; they hardly increase in size, but on the last whorl and a half become obsolete; the lines of growth are very fine. Spirals—below the suture is a narrow horizontal shelf, whose sharp edge is ornamented with an expressed row of blunt tubercles; these are formed by a deepish furrow isolating the tops of the ribs; narrow shallow furrows stipple the interstices of the riblets; these become faint on the last whorl, but increase in strength and become more continuous as they approach the outer lip; they also increase in strength towards the point of the base. *Colour*

[1] ψιλός, rubbed.

horny or translucent glassy white, with some brown stains vaguely linear. *Spire* high, conical, scalar. *Apex* small, consisting of 3½ depressedly globose, glossy, keeled, embryonic whorls. *Whorls* 9 to 10, horizontally shouldered, angulated, cylindrical, with a short, rounded, and contracted base. *Suture* marginated and slightly constricted. *Mouth* round, sharply pointed above. *Outer lip* rounded on the edge and narrowly reverted, straight above, rounded at the base, more or less patulous throughout; the canal has a reverted, flanged margin. *Inner lip* convex on the body, concave in the middle, straight on the pillar; the labial glaze, which is very glassy, spreads broadly and undefinedly on the body, and projects with a narrow prominent edge down the pillar, which has a flanged and twisted point. H. 0·78 in. B. 0·39. Penultimate whorl, height 0·16. Mouth, height 0·38, breadth 0·22.

It is quite possible this may prove to be only a deep-water variety of that very variable species, *Nassa glans*, L.; but it is so different that it is impossible to place it in that group, and, indeed, Mr Marrat connects it with a different section altogether. There is no form which unites the polish and the exquisite sculpture of this species.

12. *Nassa* (*Alectryon*) *monile* (Kiener).

Buccinum coronatum, var. Quoy and Gaimard, "Astrolabe" (Zool.), vol. iii. p. 44, pl. xxxii. figs. 11, 12.
Buccinum monile, Kiener, Iconographie, p. 68, sp. 66, pl. xi. fig. 40.
Nassa „ A. Adams, Proc. Zool. Soc. Lond., 1851, p. 103, sp. 4.
„ „ Reeve, Conch. Icon., vol. viii. pl. vi. fig. 38.
„ (*Alectryon*) *monile*, Tryon, Manual, vol. iv. p. 28, pl. ix. figs. 60–68.

July 21, 1874. Reefs off Tongatabu.

Habitat.—New Guinea (Adams), Philippines (Reeve).

I have quoted Mr Tryon's representatives of this species as he figures them. They offer a strange medley. Perhaps nowhere is guessing more cruel than in regard to the Nassas. They form a very difficult group, in which even the most cautious and practised observer may err, but his errors ought, at the very least, to have their basis in observation of facts. The only thing to be done with guess-work is to sweep it utterly aside as a fresh creation of difficulties.

13. *Nassa* (*Zeuxis*) *algida*, Reeve.

Nassa algida, Reeve, Conch. Icon., vol. viii. pl. xxii. fig. 145.
Nassa (*Zeuxis*) *picta*, of Dunker, var. *algida*, Tryon, Manual, vol. iv. p. 36, pl. xi. fig. 141.

? September 8, 1874. Cape York, off Albany Island, Torres Strait. 3 to 12 fathoms.

Station 208. January 17, 1875. Lat. 11° 37′ N., long. 123° 31′ E. Philippines. 18 fathoms. Blue mud.

Habitat.—Moreton Bay, Australia (Reeve).

The specimens from the first of these localities (to which I have added a mark of interrogation) are not satisfactorily identified. They are dead and quite opaque shells, and for that misleading element one must make allowance, with perhaps the risk of making too much. Then the form is more slender, and the whorls, especially the last, are less tumid than in the types. The upper whorls, too, have stronger spiral lines decussating the longitudinals; and though the embryonic whorls are two in both cases, they seem in the Challenger specimens to rise in a slightly higher cone. Still, I do not feel justified in separating them, and believe that a larger series of specimens than I have seen would supply transitional forms. They may perhaps stand as a var. *chlora*, Wats.

Mr Marrat of the Liverpool Museum, who has made this genus a special study, inclines to class these as a variety under his *Nassa lævigata*, but they seem to me to be rather more remote from that species than from *Nassa algida*. Later revision confirms the identification as above.

14. *Nassa* (*Zeuxis*) *canaliculata* (Lamarck).

Buccinum canaliculatum, Lamarck, Anim. s. vert., vol. vii. p. 267, and (ed. Desh.) vol. x. p. 161, sp. 12 (sec. *Nasses*).
" " Kiener, p. 61, sp. 60, pl. xxiii. fig. 89.
Nassa canaliculata, Adams, Proc. Zool. Soc. Lond., 1851, p. 106, sp. 2.
" " Reeve, Conch. Icon., vol. viii. pl. iii. fig. 18.
Buccinum canaliculatum, Küster, Conch. Cab. (ed. Küster), p. 32, pl. vii. figs. 8, 9.
Nassa (*Zeuxis*) *canaliculata*, Marrat, Varr. of *Nassa*, p. 38, No. 404.
" " " Tryon, vol. iv. p. 31, pl. ix. figs. 83–86.

Station 203. October 31, 1874. Lat. 11° 6′ N., long. 123° 9′ E. Philippines. 12 to 20 fathoms. Mud.

Habitat.—Philippines (Adams).

These Challenger specimens are about half the usual size of this species, have the upper whorls costate and the lower closely plicate, and the canal at the suture is very much suppressed. From *Nassa unicolor*, Kien., they differ in having the upper whorls much more closely ribbed; in that species too, the suture is not marginated nor studded with gems, and there is on the body a sort of double callus, as in *Nassa bicallosa*, E. A. Sm.

15. *Nassa* (*Zeuxis*) *levukensis*, Watson (Pl. XI. fig. 3).

Nassa (*Zeuxis*) *levukensis*, Watson, Prelim. Report, pt. 13, Journ. Linn. Soc. Lond., vol. xvi. p. 363.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Shell.—Thin, rather smooth, brownish, livid, ovate, subfusiform, scarcely oblique, with a short, subscalar spire, and a small but bluntish apex; the anterior canal is very shortly but sharply margined, with scarcely any snout. *Sculpture:* Longitudinals—the earlier whorls are crossed by numerous rather fine straight riblets parted by similar furrows; these ribs and furrows increase in strength, but not proportionally so, down

the spire, and tend to become obsolete on the body-whorl; the lines of growth are fine, smooth, and unequal. Spirals—a strongish furrow below the suture cuts off the top of the ribs as a row of nodules; the middle of the whorls is scored, especially in the intercostal furrows, with remote impressed lines, which are more or less obsolete; on the front of the base are 4 to 6 strongish, flat, subimbricated threads: coiling round the base of the pillar is a broad shallow furrow, in which the longitudinal ribs are visible; below this is a prominent thread, while the point of the pillar is scored by about 4 sharpish threads with broader furrows. *Colour* livid, with more or less of brown; the point of the pillar is white, as are two bands, one at the suture and the other above the periphery. *Spire* short, conical, subscalar. *Apex* small but blunt, the three smooth, rounded, globose embryonic whorls being somewhat depressed; they are also markedly smaller than the succeeding regular whorl. *Whorls* 9, conical, slightly convex, the last a little tumid. *Suture* impressed and slightly canaliculate. *Mouth* oval, pointed, channelled and nicked above, with a short oblique canal in front. *Outer lip* sinuated above, straight, and rather contracted to the point of the base, where it is patulous; it is toothed within, serrated on the anterior edge, right-angled at the canal, the edge of which is sharply margined by the infrabasal thread. *Inner lip* concave and toothed above, straight and bluntly tubercled on the pillar, the point of which is flanged, and down which the edge of the labial callus projects prominently, leaving a shallow chink behind it. *Operculum* thin, yellow, oval, triangular, with a slightly serrated outer and inner edge. H. 0·8 in. B. 0·45. Penultimate whorl, 0·18. Mouth, height 0·33, breadth 0·24.

Mr Marrat of Liverpool, whose labours on the genus *Nassa* in particular are well known, and who has had the goodness carefully to examine the whole of the Challenger species of the group, considers this species to be his *Nassa lævigata* (=*glabella*, Marr. *nec* Sow.), an opinion which I am not able to accept. With a considerable general resemblance, the form of the shell is very different. In *Nassa lævigata* the shortness and breadth of the last whorl gives a contour-line totally unlike that of *Nassa levukensis*, which is narrow at the periphery and comparatively long in the base. It has points of resemblance to *Nassa monile*, Kien., to *Nassa algida*, Reeve, to *Nassa coronata*, Lam., and to *Nassa crenulata*, Brug., but is certainly distinct from them all. It most of all resembles one of the depauperated forms of *Nassa canaliculata*, Lam., in some of which the canaliculation of the suture becomes very obsolete; but in none of these is there so sharp a flange round the anterior canal, none have so deep a furrow at the origin of the pillar, nor so sharp a thread in front of that furrow, and in all the apex has a broader base, and is higher, sharper, more conical. The operculum, too, is quite unlike, being in these very much smaller, more oval, and without serrated edges.

16. *Nassa* (*Zeuxis*) *crenulata*, Bruguière.

Buccinum crenulatum, Bruguière, Encycl. méthod., vers., vol. i. p. 271, sp. 37, pl. cccxciv. fig. 6.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 267 (ed. Desh.), vol. x. p. 161, sp. 13 (sec. *Nasses*).

Buccinum crenulatum, Kiener, Iconographie, p. 62, No. 61, pl. xxiii. fig. 90.
Nassa crenulata, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 103, sp. 5.
Buccinum crenulatum, Eydoux and Souleyet, "Bonite" Zool., vol. ii., 1852, p. 608, pl. xli. figs. 1–4.
Nassa crenulata, Reeve, Conch. Icon., vol. viii. pl. i. fig. 2.
„ (*Zeuxis*) *crenulata*, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 180, No. 48.

Station 233. May 17, 1875. Lat. 34° 39′ N., long. 135° 14′ E. Off Kobé, Japan. 8 fathoms. Mud.

Station 233B. May 26, 1875. Lat. 34° 18′ N., long. 133° 35′ E. Off Japan. 15 fathoms. Blue mud.

Station 233C. May 28, 1875. Lat. 34° 18′ N., long. 133 21′ E. Off Japan. 12 fathoms. Bottom temperature 59° 9′ Fahr. Blue mud.

Habitat.—Indian Seas (Adams), Philippines (Reeve), North-Eastern Australia, 20 to 30 fathoms (Brazier).

17. *Nassa* (*Cæsia*) *limata* (Chemnitz).

Buccinum lima, seu *limatum*, Chemnitz, Conch. Cab., vol. xi. p. 87, pl. clxxxviii. figs. 1808, 1809.
„ *prismaticum*, Brocchi, Conch. fossile Subappenina, vol. ii. p. 337, pl. v. figs. 5, 7.
„ *lima*, Wood, Ind. Test., p. 118, pl. xxiii. fig. 116.
„ *prismaticum*, Philippi, Enumeratio, vol. i. pp. 219, 225, and vol. ii. pp. 188, 191, sp. 1.
„ *scalariforme*, Kiener, Iconog., p. 79, sp. 77, pl. xxi. fig. 80.
„ „ D'Orbigny, Moll. Canaries, p. 90, No. 136.
„ *limatum*, Lamarck, Anim. s. vert. (ed. Desh.), vol. x. p. 200, sp. 81 (sec. *Nasses*).
Nassa prismatica, Wood, Crag. Moll., Palæont. Soc., 1848, p. 32, pl. iii. fig. 6.
„ *scalariformis*, A. Adams, Proc. Zool. Soc. Lond., p. 109, No. 1.
Buccinum prismaticum, Petit de la Saussaye, Journ. de conch., vol. iv. 1853, p. 432.
Nassa scalariformis and *Nassa prismatica*, M'Andrew, Distrib. Moll. North Atlantic, pp. 26, 33, 40.
„ *prismatica*, Hörnæs, Foss. Moll. d. Wien. Bass., p. 146, pl. xii. figs. 13, 14.
Buccinum prismaticum, Küster, Conch. Cab. (ed. Küster), p. 15, pl. iv. figs. 8–10.
Nassa limata, Weinkauff, Conch. d. Mittelmeer, vol. ii. p. 56, sp. 2.
„ „ Monterosato, Enumeraz., p. 42.
„ *prismatica*, v. Martens, Meer. Conch. Capverd. Ins., Sitz.-Bericht Gesellsch. Naturforsch. Fr. Berlin, Feb. 16, 1875, p. 26.
„ *limata*, v. Martens, Conch. Westafr., Jahrb. d. deutsch. malak Gesellsch., 1876, p. 239, No. 3.
„ „ Seguenza, Formaz. terz. Calabria, pp. 260, 318, 353.
„ *prismatica*, Seguenza, Formaz. terz. Calabria, pp. 50, 106, 318.
„ *prysmatica*, Bellardi, Moll. terz. del Piemonte, pt. 3, p. 71, pl. v. fig. 1.

February 10, 1873. Gomera, Canaries. 75 fathoms.

Habitat.—Rare in the Mediterranean, plentiful at Madeira, Canaries, Mogador, and the Cape Verde Islands.

Fossil.—From the Miocene onwards (Seguenza).

Professor Seguenza holds Brocchi's fossil species in its Miocene and in some of its Pliocene forms to be distinct from *Nassa limata*, Chemnitz. Professor Bellardi also regards the two as distinct, pointing out in detail features of difference between them. Professor von Martens considers that both forms are still living, the species of Brocchi in the Mediterranean, and that of Chemnitz in the Atlantic, but refuses to separate them as distinct. I do not know the fossil form, and have therefore followed the common estimate of the species.

18. *Nassa* (*Hebra*) *echinata* A. Adams.

Nassa (*Hebra*) *echinata*, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 101, sp. 67.
" " " Reeve, Conch. Icon., vol. viii. pl. xx. p. 131.
" " " E. A. Smith, Andaman Shells, Proc. Zool. Soc. Lond., 1878, p. 810, No. 31, pl. L. fig. 9.
" " " Tryon, Manual, vol. iv. p. 44, pl. xiv. figs. 223, 224.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Philippines (Adams), Andamans (E. A. Smith).

This species, like *Nassa muricata*, is placed by Adams in his sub-genus *Hebra*, and in the British Museum in the sub-genus *Utiza*, but can belong to neither, the outer lip being strongly varixed and internally lirate.

The Challenger specimens present a somewhat depauperated form of this species, but in all essentials agree with the type. In many respects they might be considered a spinose variety of *Nassa delicata*, A. Ad., but they are more glossy, not having the resinous sheen of that species, the spire is more stumpy, the longitudinal ribs are fewer and straighter, and the spirals are much stronger above, while on the base they are fewer and fainter. Varying from the type in size as these specimens do, I was glad to have my identification of them decidedly confirmed by the opinion of Mr Smith. In regard to *Nassa muricata*, Q. and G., to which Mr Tryon seems inclined to unite this, it may be well to say, that apart from very palpable differences, the embryonic apex, though very like, is higher and narrower, has a deeper suture, and a higher-placed carina than *Nassa echinata* has.

19. *Nassa* (*Hebra*) *muricata* (Quoy and Gaimard).

Buccinum muricatum, Quoy and Gaimard, "Astrolabe," vol. ii. p. 450, pl. xxxii. figs. 32, 33.
" " Kiener, Iconographie, p. 93, sp. 92, pl. xxvii. fig. 110.
" " Lamarck, Anim. s. vert. (ed. Desh.), vol. x. p. 198, sp. 79 (sec. *Nasses*).
Nassa muricata, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 101, sp. 62.
" " Reeve, Conch. Icon., vol. viii. pl. xi. fig. 73.
" " Deshayes, Moll. Réunion, p. 129.
" (*Hebra*) *muricata*, v. Martens, Moll. Mauritius, &c., p. 244.
" " " Tryon, Manual, vol. iv. p. 44, pl. xiv. figs. 214, 218.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Réunion (Deshayes), Indian Ocean, Nicobars, Ceylon, Malay Peninsula (v. Martens), Philippines (Adams), New Ireland (Reeve).

This species is put by Adams in his sub-genus *Hebra*, and in the British Museum in the sub-genus *Utiza*; but it can belong to neither, the outer lip being strongly variced and internally lirate. I have thought it best, however, that where the Messrs Adams put this and *Nassa echinata*, they should be left if for nothing else than as a witness to the value of these subdivisions.

20. *Nassa* (*Aciculina*) *babylonica*, Watson (Pl. XI. fig. 8):

Nassa (*Aciculina*) *babylonica*, Watson, Prelim. Report, pt. 13, Journ. Linn. Soc. Lond., vol. xvi. p. 366, sp. 4.

Station 210. January 25, 1875. Lat. 9° 26′ N., long. 123° 45′ E. Philippines, 375 fathoms. Blue mud. Bottom temperature 54°·1.

Shell.—Small, thin, porcellanous, high and narrow, scalar, ribbed, with a sharp tubercle at the top of each rib, a small blunt apex, and a very short stumpy base. *Sculpture:* Longitudinals—there are rounded, rather high, narrow, straight, sparsely-set ribs, almost mucronate at the top of the whorls and tubercled on the base; the lines of growth are fine, close, and hair-like. Spirals—below the narrow, flat, horizontal shoulder are two or three threads, which rise into sharp points in crossing the ribs; in the middle of the whorls there are some faint traces of raised threads; those on the base are sharper, and rise into tubercles in crossing the ribs; all these, as well as the ribs, die out at the extreme point of the base; beyond this the pillar is defined by a strong broad furrow, and the short twisted pillar is scored with rounded threads. *Colour* porcellanous white. *Spire* high, scalar, conical. *Apex* a blunt little cone of 3¼ depressed rounded whorls, out of which the minute tip just rises into view; the last of these embryonic whorls is keeled. *Whorls* 9½, with a flat horizontal shoulder, from which each whorl in turn rises like a cylindrical tower; at the outer edge of the shoulder the whorls are sharply angled; they are all very short; and the last, which is small, has a very truncate, rounded base. *Suture* marginated and very flexuous in consequence of the tubercles on the margin. *Mouth* round, patulous, bluntly pointed above, prolonged across the front of the very short pillar into a little round hole of a canal. *Outer lip* well arched, retiring, with a rounded edge, and thickened both outside and in; on the internal varix there are in front a few small blunt tubercles; round the canal the edge is thickened, reverted, and emarginate. *Inner lip* straight across the body, concave in the middle, and straight on the very short pillar: the labial pad is rather narrow, thick, with a raised and rounded edge; it has a biggish tubercle near the top, and 3 or 4 others, smaller, on the body and pillar, the point of which is twisted and patulous, but not flanged. *Operculum* very small, triangular or claw-shaped, being long and narrow; the edges are not serrated. H. 0·45 in. B. 0·23. Penultimate whorl, height 0·1. Mouth, height 0·16, breadth 0·11.

I do not know with what to compare this curiously shaped species, in which the whorls, tubercled round the top, rise one above the other in terraces or small towers. There is a fossil species, *Nassa turbinelloïdes*, described and figured by Professor Seguenza in his great work "Le formazioni terziarie nella Provincia di Reggio," p. 261, pl. xvi. fig. 23, which seems to resemble it more than anything I know; but that species is markedly different in its longer and less truncated base. Mr Marrat, in his "Varieties of *Nassa*," p. 59, No. 992, puts the Challenger species between *Nassa plebecula*, Gould, and *Nassa luteola*, E. A. Sm.

21. *Nassa* (*Hima*) *paupera*, Gould.

Nassa paupera, Gould, Proc. Bost. Nat. Hist. Soc., 1850, vol. iii. p. 155.
" " Gould, Otia, p. 70.
" " Gould, U.S. Expl. Exped., p. 262, pl. xix. fig. 330.
" *unifasciata*, Pease, MS.
" *paupera*, Carpenter, Synonymy of Mr Pease's Shells, Proc. Zool. Soc. Lond., 1865, p. 516.
" (*Hima*) *unifasciata*, Brazier, Proc. Linn. Soc. New South Wales, vol. i. p. 181.
" " *paupera*, Tryon, Manual, vol. iv. p. 47, pl. xv. figs. 246–250.

April 17, 1874. Port Jackson, Sydney.

Station 163B. June 3, 1874. Lat. 33° 51′ 15″ S., long. 151° 22′ 15″ E. Off Port Jackson. 35 fathoms. Hard ground. Bottom temperature 63°.

Habitat.—North and North-East Australia and New Guinea, 5 to 30 fathoms (Brazier), Pacific Islands (Gould).

In the Proc. Zool. Soc. Lond., 1863, p. 343, Dr P. Carpenter has some valuable remarks on the whole group of species to which this of Gould belongs.

22. *Nassa* (*Hima*) *capillaris*, Watson (Pl. XI. fig. 7).

Nassa (*Hima*) *capillaris*, Watson, Prelim. Report, pt. 13, Journ. Linn. Soc. Lond., vol. xvi. p. 369.

Station 113A. September 1, 1873. Lat. 3° 47′ S., long. 32° 24′ 30″ W. Anchorage at Fernando-Noronha. 25 fathoms. Volcanic sand and gravel.

Shell.—Rather small, thick, porcellanous, stumpy, with rounded whorls, a conical subscalar spire, a short conical apex, a rounded, truncate, oblique base, and a short, very oblique snout defined by a strong furrow. *Sculpture:* Longitudinals—there are about 12 coarse rounded ribs and furrows; the last rib forms a strong varix behind the lip; these ribs are very feeble in the suture, and die out on the base; there are hair-like,[1] sharp, close-set lines of growth. Spirals—on the penultimate whorl there are about 6 strongish rounded threads, above these and below the suture are two or three finer and weaker; those on the base are rather stronger than the others; the base of the pillar is defined by a strong furrow, with a sharp thread in front of it; the pillar is somewhat weakly scored by coarse flat spirals. *Colour* somewhat glossy white, with more or less of a rich chestnut band in the middle of the whorls, which colour is strongest in the

[1] Hence the name.

interstices of the ribs. *Spire* rather high, conical, subscalar. *Apex* small, consisting of three turbinate rounded whorls. *Whorls* 10, short, subcylindrical, constricted at the top; the last is hunchy, very short, round, with a very oblique contracted base. *Suture* a little impressed, and slightly marginated in consequence of the comparative feebleness of the ribs immediately below. *Mouth* round, open, very bluntly pointed above, and produced below into the oblique, narrow, funnel-mouthed canal. *Outer lip* thickened outside and in by a white varix, of which the one inside is scored by 10 or 12 long, close-set, sharpish teeth; it is arched throughout, is very slightly retreating, and very patulous on the forward-arching base. *Inner lip* semicircular, with a thick white pad of glaze, which has a sharp, prominent, and defined edge with a slight chink behind it; there is a strong blunt tooth above, several irregular and indefinite tubercles on the body, and four or five round and biggish tubercles on the very short pillar, whose twisted, patulous, and abruptly cut-off point is not flanged. H. 0·5 in. B. 0·25. Penultimate whorl, height 0·1. Mouth, height 0·21, breadth 0·17.

Mr Marrat thinks I have mixed up two species here; he regards the largest specimen as *Nassa proxima*, C. B. Ad. (= *Nassa versicolor*, C. B. Ad., *fide* Carp.), a Panama species, and holds the rest as *Nassa incrassata*, Müller, a North-Atlantic and British species. Dr Gwyn Jeffreys agrees with me in considering all the specimens to belong to one species, and that *not Nassa incrassata*. Compared with *Nassa proxima* this species differs in being more contracted at the suture; the whorls are rounder and less flat, and lack the peculiar infrasutural contraction and flattening and the solitary strong remote thread which lies there; the spirals are stronger and more regular, while that species is nearly smooth; the embryonic apex is larger, its whorls being in that other species more minute, while they are at the same time depressed or immersed. The longitudinal ribs, too, in *Nassa proxima* are fewer and weaker; the mouth is larger, more oval, more produced at the lower outer corner; the outer lip is thinner, with fewer, narrower, less regular teeth; the inner lip is much more widely spread out on the body; the pillar, too, is shorter. It has resemblances to *Nassa sanctæ-helenæ*, A. Ad., to *Nassa cinctella*, Gould, to *Nassa coccinella*, Lam., to *Nassa antillarum*, D'Orb., to *Nassa ambigua*, Pult., to *Nassa pygmæa*, Lam., to *Nassa nucleolus*, Phil., and to *Nassa acuta*, Say, with all of which this species has been very carefully and fully compared; but it is needless to detail the points of distinction. As regards *Nassa incrassata*, Müller, that very variable species has a very constant stain in the canal; seen from above, the whole canal and pillar are broader; the longitudinal ribs are more regular, and these, like the spirals, are stronger, being both rounder and higher; and they run flexuously indeed but with a distinct trend from left to right, while in the Challenger species the trend is from right to left. In Müller's species the apical whorls are more rounded, and are parted from each other by a deeper suture; the labial pad, too, is undefined.

23. *Nassa* (*Tritia*) *ephamilla*,[1] Watson (Pl. XI. fig. 9).

Nassa ephamilla, Watson, Prelim. Report, pt. 13, Journ. Linn. Soc. Lond., vol. xvi. p. 370, sp. 7.

Station 169. July 10, 1874. Lat. 37° 34′ S., long. 179° 22′ E. N.E. from New Zealand. 700 fathoms. Blue mud. Bottom temperature 40°.

[1] ἐφάμιλλος, a match for another, viz. *Nassa woodwardi*, Forb.

Shell.—Rather small, thin, chalkily porcellanous, ovate, with a shortish scalar spire, a rounded apex, a marginated suture, whorls rounded and beset with small prickles, a tumid base, and a very short pillar. *Sculpture:* Longitudinals—there are on each whorl about 20 narrow feeble ribs, which do not extend to the upper suture and die out on the base; the lines of growth are fine, flexuous, and close-set. Spirals—there are on the penultimate whorl four broadish but very slightly raised threads; in crossing the longitudinal riblets these rise into small prickles, or pointed tubercles; on the body-whorl there are 5 or 6 of these, and 4 or 5 more on the base, which latter are sharper, higher, and less tubercled; below the suture is a short, bare, more or less flat shoulder; round the base of the pillar is a small sharp spiral, which is continuous with the upper edge of the canal; the back of the pillar is scored with very undulating lines, the scars of the old canal. *Colour* chalky white. *Spire* rather short, more or less scalar, with a convex outline. *Apex* blunt and rounded, consisting of nearly 4 largish, smooth, turbinate, convex whorls, of which the highest is immersed. *Whorls* 7, stumpy, convexly cylindrical, flatly shouldered above; the last is tumid, with a very rounded, almost inflated, and short base, on which, looked at from behind, the point of the pillar is barely discernible, and the edge of the canal does not project at all. *Suture* impressed, flatly marginated below, very horizontal. *Mouth:* a perfect oval all round, having no angulation above, and though cut on the edge, yet being in its sweep quite uninterrupted by the canal in front. *Outer lip* thin, sharp, and patulous, very prominent but barely angulated at the point of the base in advance of the pillar; the canal is shallow and open, with a very reverted funnel-edge. *Inner lip* concave, with a thick, narrow, defined labial pad running down the very short pillar, whose point is sharp and expanded, but not flanged. *Operculum* plain-edged, small, triangular, slightly subspiral, having its apex terminal and bent in towards the left. H. 0·57 in. B. 0·33. Penultimate whorl, height 0·14. Mouth, height 0·25, breadth 0·2.

Mr Marrat considers this species "very closely allied to *Nassa woodwardi*, Forbes," and from this fact I have derived its name. It is certainly liker that than anything else I know, but is very markedly distinct. That species has a conical spire, a long, narrow, oblique body-whorl, with a short penultimate whorl, and a produced base, on which the pillar and canal-edge project prominently; the whorls are conical; the suture is marginated not so much by a bare shoulder below, as by a row of coarse blunt tubercles; its ribs and spirals are broad and square; and their intersection produces square and very blunt tubercles, of which there are about 30 in each whorl; the outer lip is thick and toothed, and the pillar is comparatively long. The absence of the crimson-brown bands of that species proves nothing; for these might quite naturally be absent in deep-sea specimens.

Buccinum spinulosum, Phil. (Enum. vol. ii. p. 191, tab. xxvii. fig. 13), seems to have many points of resemblance. In shape as well as in sculpture it is very like; only both ribs and spirals are much stronger; the mouth, too, is oval, but it is pointed above and is longer below, *Nassa ephamilla* having a broader and more truncate base. My estimate on all these points, however, is based on Philippi's description and figure, the species itself being unknown to me.

24. *Nassa (Tritia) brychia*,[1] Watson (Pl. XI. fig. 5).

Nassa (Tritia) brychia, Watson, Prelim. Report, pt. 13, Journ. Linn. Soc. Lond., vol. xvi. p. 365, sp. 3.

Station VIII. February 12, 1873. Lat. 28° 3′ 15″ N., long. 17° 27′ W. Off Gomera, Canaries. 620 fathoms. Volcanic mud.

Shell.—Strong, coarse, dirty white, ovate, rather stumpy, with a conical subscalar spire, a small blunt apex, a round truncated base, a very short pillar, and scarcely any snout. *Sculpture:* Longitudinals—the whorls are crossed by blunt, narrow, sparse, sinistrally oblique riblets, which continue to the snout; the last forms a strong varix on the edge of the lip; the lines of growth are fine, but towards the mouth become coarse. Spirals—below the suture is a slight shoulder formed by a row of coarse, depressed tubercles marking the upper end of the riblets; on the upper whorls there are 2 to 3, on the body about 5, coarse, shallow furrows parted by broadish flat bands; on the base there are 6 of these furrows with narrower bands; round the base of the pillar winds obliquely a shallow furrow, with a slight sharpish band in front; the short pillar is scored with the old contorted canal-scars. *Colour* a dirty porcellanous yellowish white. *Spire* rather short, conical, subscalar. *Apex* blunt and rounded, consisting of $3\frac{1}{2}$ smooth, depressedly turbinate whorls, of which the tip is very small. *Whorls* 9, conical, scarcely convex, not constricted below, with a short rounded base. *Suture* marginated, and this margin tubercled. *Mouth* oval, open, bluntly pointed above. *Outer lip* sharp on the edge, sparsely toothed, patulous, almost straight, slightly advancing below, but not prominent on the base; the canal has a slightly reverted flange. *Inner lip* straight; on the body it is a little hollowed into the pillar, which is very short, and has in front a thickened (but not flanged) twisted edge; the pad of glaze is not thick, and has a sharply defined outer edge throughout its whole length. H. 0·65 in. B. 0·37. Penultimate whorl, height 0·14. Mouth, height 0·35, breadth 0·2.

This resembles *Nassa reticulata*, Lam., more than any other Atlantic form; but, besides being much smaller, the form of spire is much more scalar; the ribs and spiral threads are much fewer, and their intersections are flattened, not tubercled; the callus on the lip is not indefinitely spread on the body; the junction of the pillar and the body is not so deeply furrowed; and the front of the pillar has no threads, only scars. It somewhat approaches a variety of *Nassa trivittata*, Say; but that has a much more conical, less scalar spire, with more rounded whorls; the last whorl is much less broad, is higher, is more extended in front, and is covered with raised rounded threads.

Mr Marrat, in his most curious and interesting study "On the Varieties of the Shells of the Genus *Nassa*," p. 52, puts this species into a group very remote from either of the above.

[1] βενχιός, belonging to the deep sea.

2. *Bullia*, Gray, 1834.

Species.

1. *Bullia lævigata*, Chemn. 2. *Bullia* (*Buccinanops*) *gradata*, Desh.

1. *Bullia lævigata* (Chemnitz).

Buccinum lævigatum, Chemnitz, Conch. Cab. (1780), vol. iv. p. 72, pl. cxxvii. figs. 1215, 1216.
„ *lævissimum*, Gmelin (1790), p. 3494, No. 106.
„ *flammeum*, Bruguière, Encyclop. méthod., vers. (1792), vol. i. p. 266, sp. 32, pl. cccc. fig. 1, a, b.
„ *lævissimum*, Lamarck, Anim. s. vert., vol. vii. p. 265, and (ed. Desh.) vol. x. p. 157, sp. 6 (sec. *Nasses*).
„ „ Dillwyn, Catalogue, vol. ii. p. 623, sp. 83.
„ „ Wood, Ind. Test., p. 116, pl. xxiii. fig. 84.
„ „ Quoy and Gaimard, de Freycinet voy. "Uranie" et "Physicienne," p. 435, pl. lxxii. fig. 8.
„ „ Quoy and Gaimard, "Astrolabe" Zool., vol. ii. p. 433, pl. xxxi. figs. 14–16.
„ „ Kiener, Iconog., Monog. Buccinum, p. 17, sp. 18, pl. vii. fig. 20.
Bullia lævigata, Reeve, Conch. Icon., vol. iii. pl. i. fig. 6.
Buccinum (*Bullia*) *lævissimum*, Krauss, Südafrik. Moll., p. 121, sp. 11.
„ *lævigatum*, Küster, Conch. Cab. (ed. Küster), p. 5, pl. ii. figs. 4, 5.
„ (*Bullia*) *lævissimum*, v. Martens, Südafrik. Moll., Jarhb. deutsch. malak. Gesellsch., vol. i. p. 137, No. 121.
Bullia lævissima, Tryon, Manual, vol. iv. p. 11, pl. v. fig. 59.

December 1873. Simon's Bay, Cape of Good Hope. 15 to 20 fathoms.

Habitat.—Cape of Good Hope (British Museum).

2. *Bullia* (*Buccinanops*) *gradata* (Deshayes).

Buccinum gradatum, Lamarck, Anim. s. vert. (ed. Desh.), vol. x. p. 186, sp. 61.
„ *cochlidium* (*in err.*), Kiener, Iconog., Monog. Buccinum, p. 10, sp. 10, pl. vi. fig. 17.
Bullia gradata, Reeve, Conch. Icon., vol. iii. pl. i. fig. 3.
Buccinanops cochlidium, D'Orbigny, Voy. Amér. Mérid., vol. v. p. 434, No. 354, pl. lxi. fig. 25.
Bullia (*Buccinanops*) *cochlidium*, Tryon, Manual, vol. iv. p. 13, pl. vi. fig. 77.

Station 321. February 25, 1876. Lat. 35° 2′ S., long. 55° 15′ W. Off Monte Video. 13 fathoms. Mud.

Habitat.—Mouth of the Rio Grande (British Museum), Patagonia (D'Orb.), Brazil to Patagonia; on the Pacific coast, north to Peru (Tryon).

Deshayes, while rejecting Kiener's identification of this species with a *Buccinum cochlidium* of "Martini, pl. 55" (where nothing but Cones are to be found), and which, probably, is the species of Chemnitz (Conch. Cab., vol. xi. p. 275, pl. ccix. figs. 2053, 2054), follows Kiener, who had followed Chemnitz, in ascribing the species to New Zealand. Mr Tryon accepts Kiener's identification of the species, but not the habitat he assigns to it.

On examining a large series of this species, and of *Buccinum deforme*, King, a fossil from the Pampas, south of Buenos Ayres, and living in the estuary of La Plata, the two species, I thought, ran into one another.

Family FUSACEA, Troschel, 1868.

Genera. 1. *Fusus*, Klein. 2. *Pyrula*, Lam. 3. *Buccinum*, Linn. 4. *Cominella*, Gray. 5. *Pisania*, Bivona. 6. *Neobuccinum*, E. A. Sm. 7. *Phos*, Montfort. 8. *Eburna*, Lam.

1. *Fusus*, Klein, 1753.

Species.

1. *Fusus colosseus*, Lam.
2. *Fusus colus*, Linne.
3. *Fusus pyrulatus*, Reeve.
4. *Fusus marmoratus*, Phil.
5. *Fusus hanleyi*, Ang.
6. *Fusus niphonicus*, E. A. Sm.
7. *Fusus novæhollandiæ*, Reeve.
8. *Fusus verruculatus*, Lam.
9. *Fusus radialis*, Wats.
10. *Fusus sarissophorus*, Wats.
11. *Fusus pagodoïdes*, Wats.
12. *Fusus* (*Neptunea*) *despectus*, Linne.
13. *Fusus* (*Neptunea*) *mandarinus*, Duclos.
14. *Fusus* (*Neptunea*) *nodosus*, Martyn.
15. *Fusus* (*Neptunea*) *valedictus*, n. sp.
16. *Fusus* (*Neptunea*) *calathiscus*, Wats.
17. *Fusus* (*Neptunea*) *setosus*, Wats.
18. *Fusus* (*Neptunea*) *scalaris*, Wats.
19. *Fusus* (*Neptunea*) *regulus*, Wats.
20. *Fusus* (*Neptunea*) *edwardiensis*, Wats.
21. *Fusus* (*Siphonorbis*) *amblyterus*, n. sp.
22. *Fusus* (*Sipho*) *Libratus*, Wats.
23. *Fusus* (*Sipho*) *futile*, Wats.
24. *Fusus* (*Sipho*), n. sp.?
25. *Fusus* (*Sipho*) *pyrrhostoma*, Wats.
26. *Fusus* (*Euthria*) *chloroticus*, v. Mart.
27. *Fusus* (*Euthria*) *fuscatus*, Brug.
28. *Fusus* (*Metula*) *philippinarum*, Wats.

1. *Fusus colosseus*, Lamarck.

Fusus colosseus, Lamarck, Anim. s. vert., vol. vii. p. 121, and (ed. Desh.) vol. ix. p. 442, sp. 1.
„ „ Encycl. méthod., vers., vol. ii. p. 155, sp. 21, pl. cccexxvii. fig. 2.
Murex colosseus, Wood, Ind. Test., p. 130, pl. xxvi. fig. 72.
Fusus „ Sowerby, Genera, vol. ii. pl. ccxix. fig. 3.
Pyrula colossea, Sowerby, Thes. Conch., pt. 36, p. 102, pl. ccccxviii. (*Gen.* i.), fig. 3.
Fusus colosseus, Reeve, Conch. Syst., p. 185, pl. ccxxxii. fig. 3.
„ „ Reeve, Conch. Icon., vol. iv. pl. v. fig. 19.
„ „ Kiener, Iconog., p. 50, sp. 44, pl. xxv.
Pyrula colossea, Kobelt, Conch. Cab. (ed. Küster), p. 40, pl. vi. fig. 1.
Hemifusus colosseus, Tryon, Manual, vol. iii. p. 111, pl. xliv. fig. 232.

Locality uncertain, but either Arafura Sea or Australia.

Habitat.—Indian Ocean, Philippines (Kobelt).

This species, though often put (as, for instance, by Adams, Genera, vol. i. p. 83, and Tryon, *loc. cit.*) under *Hemifusus* (= *Cochlidium*), has the true operculum as well as the general form of a *Fusus*.

2. *Fusus colus* (Linne).

Murex colus, Linne, Syst. Nat. (ed. 12), p. 1221, No. 551.
Martini, Conch. Cab., vol. iv. p. 180, pl. cxliv. fig. 1342.
„ *longicaudatus*, Wood, Ind. Test., p. 131, pl. xxvi. fig. 73.
Fusus colus, Lamarck, Anim. s. vert., vol. vii. p. 123, and (ed. Desh.) vol. ix. p. 443, sp. 3.

Fusus colus, Deshayes, Encycl. méthod., vers., vol. ii. (pt. 2), p. 148, sp. 3, pl. ccccxxiii. fig. 2.
„ „ Kiener, Iconog., p. 5, sp. 2, pl. iv. fig. 1.
Murex colus, Hanley, Ipsa Linn. Conch., pp. 299, 523.
Fusus colus, Reeve, Conch. Icon., vol. iv. pl. iii. fig. 11.
„ „ Kobelt, Conch. Cab. (ed. Küster), p. 146, sp. 4, pl. xxx. fig. 3, pl. xlvii. fig. 1.
„ „ v. Martens, Moll. Mauritius, &c., p. 244.
„ „ Tryon, Manual, vol. iii. p. 52, pl. xxxii. figs. 89–92.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Malanipa, Basilan Strait. 10 to 20 fathoms. Sand.

Habitat.—From Madagascar to the Malayan Archipelago (v. Martens).

3. *Fusus pyrulatus*, Reeve.

Fusus pyrulatus, Reeve, Conch. Icon., vol. iv. pl. xiii. fig. 50.
„ „ Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 158, No. 10.
Pyrula pyrulata, Sowerby, Thes. Conch., pt. 36, p. 99, pl. ccccxi. (*Gen.* vii.) fig. 74.
Fusus pyrulatus, Kobelt, Conch. Cab. (ed. Küster), p. 145, pl. xlvi. figs. 2, 3.
„ „ Tryon, Manual, vol. iii. p. 66, pl. xxxix. figs. 171, 172.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

Habitat.—Van Diemen's Land (Reeve).

The Challenger shell is a young specimen of this species, of which a marked feature is the presence of minute longitudinal striæ at the end of the embryonic whorls.

4. *Fusus marmoratus*, Philippi.

Fusus marmoratus, Philippi, Abbild. und Beschreib., August 1846, vol. ii. p. 120, pl. xxiv. fig. 7.
„ „ Reeve, Conch. Icon., vol. ii. pl. i. fig. 1 a and b, and var., fig. 2.
„ *multicarinatus* (but not of Lamarck), D'Orbigny, Amérique méridionale, vol. v. p. 446, No. 382.
„ *marmoratus*, Sowerby, Thes. Conch., pts. 35, 36, p. 74, sp. 29, pl. ccccxvii. (xiii. *Gen.*) fig. 158; and pl. ccccxvii. *bis.* (xiv. *Gen.*), fig. 163 (but not pl. ccccviii. iii. *Gen.*, fig. 20[1]).
„ *verrucosus* (not of Gmelin, nor yet of Dillwyn and of Wood), Kobelt, Conch. Cab. (ed. Küster), p. 187, sp. 47 (in part), pl. lx. fig. 3 (? but not pl. xxxi. figs. 4, 5, nor pl. lx. figs. 1, 2, 4, 5).
„ *marmoratus*, Tryon, Manual, vol. iii. p. 55, pl. xxxiv. figs. 114, 115 (as var. of *Fusus australis*, Quoy).

September 1873. Bahia. 7 to 20 fathoms.

Habitat—?—(Philippi), Rio de Janeiro (D'Orbigny).

[1] In this figure the only very distinctive features exhibited by the arrangement of the teeth on the outer lip, and the twist on the columella, point to another species than *Fusus marmoratus*.

It was unfortunate that Philippi did not know the habitat of his species; still more so, that D'Orbigny failed to recognise that the species he got at Rio de Janeiro was Philippi's species, and quite distinct from Lamarck's *Fusus multicarinatus*. That absence of information in the first instance, and the mistake in the second case, has resulted in confusion, which has gone on increasing till a whole multitude of species really quite distinct have been hopelessly mixed together. With the kind and able help of Mr E. A. Smith of the British Museum, I have gone over the whole of the group as represented in the national collection. Of course it would be out of place to take up that general subject now, the more so as Mr Smith will probably publish the results of our study; all that need be done here is to offer some notes on the species which have been mixed up with that of Philippi.

As to *Fusus multicarinatus*,[1] Lam. (Anim. s. vert., vol. vii. p. 125, sp. 9), under which D'Orbigny classes his shells from Bahia, it would be very difficult to say what that species was. It has been attributed by von Martens (Moll. Mauritius, &c., p. 244) and Dufo (Moll. Seychelles, p. 49) to the Indian Ocean, and by Menke (Spec. Moll. Nov. Holl., p. 25, No. 121) to Western Australia. In any case it is a Red Sea species (Lamarck, *loc. cit. supra;* Potiez and Mich., Moll. Douai, p. 438, No. 12, but not pl. xxxiv. fig. 5; Kiener, Iconog., p. 17, sp. 12, pl. x. fig. 1, but not pl. i. fig. 1, nor pl. xiv. fig. 2; Tapparone-Canefri, Muric. Mar rosso, p. 62; Issel, Malacologia Mar-rosso, p. 138), and is not that from South America. In regard to *Fusus verrucosus*, Gmelin (Syst. Nat., p. 3557, figured by Wood, Ind. Test., p. 126, pl. xxvi. fig. 77), to which Kobelt unites *Fusus marmoratus*, Phil., it is the shell figured by Chemnitz (Conch. Cab., vol. iv. pp. 148, 189, pl. cxlvi. figs. 1349, 1350), and ascribed by him to the Red Sea. It is also the species given by Savigny in his Description de l'Egypte, hist. nat., Planches, vol. ii. 1817; Zoologie, Coquilles, pl. iv. fig. 18 (1 and 2). That figure is fairly good, but rather gives the impression of a stumpier shell; the upper whorls are too heavy, broad, and flat; the suture is not deep enough, and the snout is too short and thick. *Fusus verrucosus* comes very near *Fusus marmoratus*, but is quite certainly different, and when once recognised can easily be distinguished. Compared to it, *Fusus marmoratus* is rather more brightly coloured; the columella in both is twisted, but in *Fusus marmoratus* the twist occurs much lower down; both have the inner lip detached, but in *Fusus verrucosus* it projects across the whole body whorl as a sharp-edged, prominent, slightly patulous, strongish lamina, behind which is a deep narrow furrow; whereas, in *Fusus marmoratus*, the inner lip is on the body thin and closely appressed, and only in front towards the canal does it begin to detach itself as a prominent lamina; the mouth is shorter in proportion to breadth, and thus is more roundly oval; at the beginning of the canal the opening is narrower, the outer lip being pinched in here so as to be roundedly indeed, but yet distinctly angular, and the edge has at this point a slight tendency to be introverted; the whole snout is shorter, stumpier, and altogether stronger, the outer lip is stained brown on the edge, the teeth are small, sharply prominent, are connected with long sharp threads which score the throat and have a distinct tendency to run in pairs; while in *Fusus verrucosus* they are larger but feeble tubercles. In *Fusus marmoratus* the spire is slightly stumpier, the whorls a very little broader, and the suture hardly so deep as in *Fusus verrucosus*. Mr Angas (Proc. Zool. Soc. Lond., 1865, p. 158) quotes *Fusus marmoratus*, Phil., as from Port Lincoln, "a single specimen." There has probably been an error of identification here. But for the confusion which

[1] A valuable note on this species will be found in Philippi, Abb. und Besch., vol. iii. p. 119, note to the monograph on Fusus.

already perplexes this species, I would have classed it as a *Fusciolaria*. In the circumstances, however, I think it better simply to note that towards the front of the pillar, above the narrowing to the canal, the lip is crossed by 2 or 3 slight nearly horizontal teeth. These teeth are quite distinct from though much obscured by the strong oblique spiral threads of the external sculpture, and coil round the pillar and form ridges and furrows through the thin callus of the lip; these ridges are peculiarly strong on the body at the top of the mouth within the lip.

5. *Fusus hanleyi* (Angas).

Trophon hanleyi, Angas, New South Austral. Shells, Proc. Zool. Soc. Lond., 1867, p. 110, pl. xiii. fig. 1.
„ „ Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 187, No. 9.
Fusus „ Sowerby, Thes. Conch., pt. 35, p. 83, pl. ccccxvi. (xii. *Gen.*) fig. 145.

April 17 to 18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Port Jackson (Angas).

The operculum of this species is not that of *Murex* nor of *Fusus*, still less that of *Urosalpinx*, being subspiral like that of *Neobuccinum*, but the character of the shell, and the great length of the canal in particular, make its union to that genus impossible. The form of shell and operculum alike remove it from *Trophon*. In perplexity, I have followed the British Museum classification as the best in the circumstances.

Mr Tryon (Manual, vol. ii. p. 155, pl. xxxix. fig. 499) classes this species as a *Urosalpinx*, probably in ignorance of the operculum at least, and asserts that it is founded on "elate specimens of *Trophon Paivæ*, Crosse." Mr Angas has had both before him (Proc. Zool. Soc. Lond., 1867, p. 187), and his judgment deserves much respect. He keeps them separate.

6. *Fusus niphonicus*, E. A. Smith.

Fusus niphonicus, E. A. Smith, Moll. from Japan, Proc. Zool. Soc. Lond., 1879, p. 203, pl. xx. fig. 34.

Station 204A. November 2, 1874. Lat. 12° 43′ N., long. 122° 9′ E. Off Manilla. 100 to 115 fathoms. Green mud.

Habitat.—South of Niphon. Lat. 34° 12′ N., long. 136° 28′ E. 52 fathoms (Smith).

I incline to class this as a *Fasciolaria* rather than a *Fusus*, the better-grown specimen of the Challenger showing indications of teeth on the pillar beyond what can be traced in Captain St John's specimen, from which Mr E. A. Smith described the shell. Still they are very faint, so I leave it under Mr Smith's classification till more and better specimens are found.

7. *Fusus novæhollandiæ*, Reeve.

Fusus novæhollandiæ, Reeve, Conch. Icon., vol. iv. pl. xviii. fig. 70.
„ „ Sowerby, Thes. Conch., pts. 35, 36, p. 73, pl. cccciv. *bis* (iv. *bis*, *Gen.*) fig. 26.
„ „ Kobelt, Conch. Cab. (ed. Küster), p. 194, sp. 53, pl. lxiii. fig. 1.
Fusus spectrum, var., Tryon, Manual, vol. iii. p. 58, pl. xxxiii. fig. 108, and pl. xxxvii. fig. 137.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

Habitat.—New Holland (Reeve).

Mr Tryon does not seem to have compared specimens of the two forms he unites. Had he marked the species as doubtful, his suggestion might have been useful. The entire group of Oriental Fususes, as he himself suggests, needs revision, and all careful study of individual species will be valuable; but the greater the confusion the greater need is there of caution.

8. *Fusus verruculatus*, Lamarck.

Martini, Conch. Cab., vol. iv. p. 180, pl. cxliv. fig. 1341.
Murex verrucosus, junior, Dillwyn, Cat., vol. ii. p. 719, sp. 75.
Fusus verruculatus, Lamarck, Anim. s. vert., vol. vii. p. 129, and (ed. Desh.) vol. ix. p. 455, sp. 23.
„ „ Deshayes, Encycl. méthod., vers., vol. ii. p. 151 (2), sp. 11, pl. ccccxxix. fig. 7 (*Fusus ocelliferus, Fusus verruculatus*, Lamarck).
„ „ Kiener, Iconog., p. 12, sp. 8, pl. xv. fig. 1.
„ *ocelliferus*, Reeve, Conch. Icon., vol. iv. pl. i. sp. 3.
„ „ Kobelt, Conch. Cab. (ed. Küster), p. 175, sp. 33, pl. lv. fig. 1.
„ „ Sowerby, Thes. Conch., pts. 35, 36, p. 83, pl. ccccxi. (vii. *Gen.*) fig. 64.
„ „ Tryon, Manual, vol. iii. p. 65, pl. xxxix. fig. 165.

December 1873. Simon's Bay, Cape of Good Hope. 15 to 20 fathoms.

Habitat ? (Reeve, Kiener, Kobelt), East Indies ? (Tryon).

Reeve ascribes this species to Bory de St Vincent, as putting the names to the plates of the Encyclopédie méthodique; but the name *Fusus ocelliferus* was a mere "figure title," and in the table of contents issued in 1827 by Bruguière, as well as in the text of Deshayes published in 1830, Lamarck's name is adopted.

9. *Fusus radialis*, Watson (Pl. XIV. fig. 2).

Fusus radialis, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 382.

Station 142. December 18, 1873. Lat. 35° 4′ S., long. 18° 37′ E. Off the Cape of Good Hope. 150 fathoms. Green sand. Bottom temperature 47° F.

Shell.—Thin, fusiform, high, narrow, with rounded whorls bisected by a sharp radiatingly tubercled keel, and parted by a deep open suture; the rounded and contracted base is produced into a long narrow snout. *Sculpture:* Longitudinals—the surface is scored by sharp, high, close-set, unequal, hair-like lines of growth. Spirals—in the middle of each whorl is a sharp expressed keel running out into rays of horizontal blunt

tubercles ;[1] above this there are two rounded threads, and below it one, parted by flat furrows three times their breadth ; on the last whorl below the keel there are of these threads, on the base three, at the root of the snout one, and on the snout about ten. The whole surface is further scratched with fine sharp lines. *Colour :* the specimen is dead and bleached. *Spire* scalar, high, and conical. *Apex* eroded. *Whorls* 6 to 7, well rounded but for the prominent sharp keel which angulates them ; they are very much contracted above and markedly so below ; the last is a little tumid, with a round much contracted base, produced into a long, straight, narrow snout. *Suture* a minute line at the bottom of the deep broad hollow in which the superior and inferior whorls meet. *Mouth* irregularly circular, and produced into a long, straight, narrow canal. *Outer lip* thin. *Inner lip* shortly concave above, and then very straight. H. 1·47 in. B. 0·62. Penultimate whorl, height 0·2. Mouth, height 0·87, breadth 0·3.

This species, the only specimen of which is unfortunately in very bad condition, slightly resembles *Fusus spiralis*, A. Ad., but is broader, the suture is opener and shallower, the upper part of the whorls is much more sculptured, and the keel is much sharper and more expressed.

10. *Fusus sarissophorus*,[2] Watson (Pl. XIV. fig. 1).

Fusus sarissophorus, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 382.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Thin, porcellanous, white, acutely, substellately carinated, with a short, conical, subscalar spire, mamillate apex, deep suture, contracted base, and long, sharp, and fine snout. *Sculpture:* Longitudinals—fine hair-like lines of growth closely cover the surface. Spirals—near the bottom of each whorl there is a very sharply expressed but not narrow keel, which is closely beset on the edge with rounded compressed little tubercles ; the whole surface of the whorls is scored with fine rounded threads and broader furrows, which are more delicate above than below the keel ; these become obsolete toward the point of the snout. *Colour* porcellanous white. *Spire* short and conical. *Apex* mamillate, but small ; it consists of nearly two glossy, keelless, cylindrical whorls, of which the extreme tip is flattened down on one side. *Whorls* 7, sharply angulate and biconical, being contracted above and below. *Suture* deep and sharp. *Mouth* clavate, being oval above and produced below into a very long and minute canal. *Outer lip* sharp, rounded, pinched in at the origin of the canal, down the side of which the line runs straight, and parallel to the pillar. *Inner lip* slightly hollowed above and very straight in front ; it is defined by a very thin and narrow glaze. H. 0·77 in. B. 0·28. Penultimate whorl, height 0·08. Mouth, height 0·55, breadth 0·11.

[1] Hence the name.

[2] So called from the long pike-like snout which it bears.

This very beautiful little shell is probably not full-grown, but possesses very marked features in the short conical spire, sharp stellate keel, and enormously long snout. The only form which seems to approach it is the *Fusus spiralis*, Ad., which has a curious geminately carinated and flattened form of whorls and a long canal; but the keel is median, the suture wide and deep, and the apex is broad and blunt, while the spire is much less broadly conical.

11. *Fusus pagodoïdes*,[1] Watson (Pl. XIV. fig. 3).

Fusus pagodoïdes, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 383.

Station 164B. June 13, 1874. Lat. 34° 13′ S., long. 151° 38′ E. Off Sydney. 410 fathoms. Green mud.

Shell.—Rather thin, chalky to porcellanous, pale, oval, with a high scalar spire made up of small sharp-flanged whorls, with a mamillate apex and a very long fine snout, down which from the round mouth runs a thread-like cleft. *Sculpture:* The surface is scored with extremely sinuous fine lines of growth formed by the subimbricated edges of scarcely raised lamellæ. Spirals—in the middle of each whorl is a sharp keel, which runs out into an excessively sharp, prominent, compressed, and upturned flange; though so sharp and compressed, this flange is really double, and consists of a multitude of very minute hollow arches, imbricated on one another. On the base of the body-whorl, coincident with the upper corner of the mouth, is a small cord-like keel closely beset with minute arched points. The upper third to half of the snout is obliquely scored with remote raised threads rising into high, sharp, arched scales. There are a few faint microscopic spiral scratches. *Colour* a dead, faintly yellowish, semiporcellanous white. *Spire* high and conical. *Apex* smooth, small, but very blunt and mamillate, consisting of little more than one embryonic whorl, which is turned up on end, bent right over and spread out on the next, in which the characteristic keel appears almost immediately. *Whorls* 7, small, of very slow increase, excessively keeled, with a hollowed shoulder above, rounded and constricted below; the last is contracted very much from the middle of the base, which is produced into a very long and very narrow, slightly flexuous, conical snout. *Suture* small but distinct, and sharp, in the bottom of the wide constriction between the keels. *Mouth* angularly rounded, running out into a small canal at the keel, and prolonged below into the long, narrow, sinuous slit of the front canal. *Outer lip* thin, roundly arched, sharply cut by the carinal canal, and again on the base by a little canal on the basal thread; it is very much pinched-in in front, and then runs down straight along the edge of the slit of the front canal. *Inner lip* rounded at the very top; it then runs straight to the point of the pillar; somewhat thickened above it joins the outer lip and stands out prominently from the body with a deep cleft behind it; it is continued down the whole pillar, standing out as a sharp thin lamina. *Operculum* large for the aperture,

[1] So called from its likeness to *Fusus pagoda*, Less.

thin, yellow, roundedly triangular, with a terminal apex, and scored across with many fine curved lines of increase, altogether much like that of many of the *Pleurotomacea*. H. 2·18 in. B. 0·9. Penultimate whorl, height 0·19. Mouth, height 1·72 (aperture 0·34, canal 1·38), breadth 0·3.

Than *Fusus pagoda*, Less., this is a smaller shell, with a shorter spire; its carinal crown is a continuous flange, not a series of hollow flat spikes, the whorls are higher between keel and suture, the base is more contracted and compressed, the prickles on the spiral threads of base and snout are much closer, sharper, and higher, the canal in front is much narrower; finally, Lesson's species has *two* embryonic whorls, and these stand up much higher than in this.

The Rev J. E. Tenison Woods, in a very interesting paper (read before the Royal Society of New South Wales, July 4, 1877, and of which he obligingly sent me a copy) on the Tertiary deposits of Australia, p. 8, refers to a fossil *Fusus* occurring in the lowest clays of the Australian Tertiary deposits of lower Miocene, or perhaps Eocene, age. Of this *Fusus* he says that "it is so like the beautiful and delicately spined *Fusus pagodus* of the Philippines, that it has, I believe, been named *Fusus pagodoïdes* by Professor M'Coy." I have not been able to ascertain that this species has ever been published, and having already, before Mr Wood's paper reached me, selected this name for the Challenger species, I have thought it better to retain it, the more so that, should the Australian fossil prove to be the same as the species living in deep water off Sydney, the substitution of another name would be a pity, and would tend to create confusion.

Since writing the above, and just as this paper was leaving my hands, I received from Professor v. Martens, with his accustomed kindness, the number of his Conchologische Mittheilungen (vol. ii. pts. 1 and 2), issued for December 1881, containing his beautifully illustrated description of *Fusus pagoda*, Less. (p. 106, pl. xxi. fig. 4), which he attaches to a new sub-genus of *Pleurotoma* under the name of *Columbarium*, enriching the group with a new species *Pleurotoma* (*Columbarium*) *spinicincta* (p. 105, pl. xxi. figs. 1–3), got by the German war-vessel "Gazelle," in 76 fathoms, on the same east coast of Australia, at (apparently) a spot distant some 500 miles N. by E. from the place from which the Challenger specimens come. At p. 122, Mr G. Schacko (pl. xxiv. figs. 1, 2) gives details of the radula, on the peculiarities of which the subgenus is mainly based. The opinion of Professor v. Martens is of course of commanding weight; and if I have not followed him here, it is merely because I see that not *Fusus pagodoïdes* alone, but many of the forms grouped under *Trophon*, will have to share the fate of *Fusus pagoda*, Less., whatever that may ultimately be.[1]

In the meantime I content myself with calling attention to this increase in the number of those forms which gather round Lesson's remarkable and beautiful species. With this increase in their number, however, there comes no link of connection between them; for not one of the three species helps to unite the other two, though the Challenger species stands on the whole nearer to Lesson's than v. Martens' species does to either. *Pleurotoma* (*Columbarium*) *spinicincta*, v. Mart., is distinguished by its high conical spire, its small apex, its more numerous carinal spines, its double basal keel, and the sparseness of the muricated threads on its snout.

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[1] I have allowed this paragraph of my Preliminary Report to stand. The opportunity I had hoped for of revising this whole group has not come to me. My conviction, however, is that Professor v. Martens' opinion will prove in the main to be the true one.

12. *Fusus* (*Neptunea*) *despectus* (Linne).

Murex despectus, Linne, Syst. Nat., ed. 12, p. 1222, No. 559.
Chemnitz, Conch. Cab., vol. iv. pl. cxxxviii. figs. 1293, 1296.
Fusus subantiquatus, Wood, Ind. Test., p. 132, pl. xxvii. figs. 93, 94.
„ *despectus*, Lamarck, Anim. s. vert., vol. vii. p. 125, and (ed. Desh.) vol. ix. p. 44, sp. 12.
„ „ Deshayes, Encycl. méthod., vers., vol. ii. p. 159, sp. 31, pl. ccccxxvi. fig. 4.
„ „ Kiener, p. 29, sp. 23, pl. xix. fig. 2.
„ „ Reeve, Conch. Icon., vol. iv. pl. x. fig. 39.
„ „ Hanley, Ipsa Linn. Conch., pp. 303, 524.
„ (*Neptunea*) *despectus*, Mörch, West Greenland Moll. in Rink's Greenland, No. 88.
„ „ „ Mörch, Oversigt over Islands Blöddyr, Vidensk. Medd. fra den Naturhist. Foren. i Kjöbenhavn, 1868, p. 211, No. 65.
„ *tornatus*, Gould, Inverteb. Mass. (ed. Binney), p. 374, fig. 641.
Neptunea despecta, Lischke, Jap. Meer. Conch., vol. iii. p. 24.
„ „ G. O. Sars, Norges Arkt. Moll., p. 267, No. 184, pl. xiv. fig. 4; also pl. x. fig. 18, and pl. xviii. fig. 52.
Fusus tornatus, Leche, Novaja Semlja, &c., Hafs-Moll.; Kongl. svenska Vetenskaps-Akad. Handlingar, vol. xvi. No. 2, p. 67, No. 135.
„ *despectus*, Sowerby, Thes. Conch., pt. 35, p. 88, pl. ccccxiii. (ix. *Gen.*) fig. 107.
„ „ d'Urban, Zool. Barents Sea, Ann. and Mag. Nat. Hist., 5th ser., 1880, vol. vi. p. 267.
Neptunea antiqua, var., Kobelt in Conch. Cab. (ed. Küster), p. 56, pl. xxvii. figs. 1, 2.
„ „ Tryon, Manual, vol. iii. p. 116, pl. xlv. figs. 247–254, pl. xlvi. figs. 255–261, pl. xlvii. figs. 262–268.
„ „ Friele, Norske Nordhavs Exped., pt. 1, p. 9, pl. i. fig. 7, pl. iv. figs. 8–10.

Station II. January 13, 1873. Lat. 38° 10′ N., long. 9° 14′ W. Off Setubal. 470 fathoms. Green mud.

Habitat.—North America, East Coast (Gould); Greenland and Iceland (Mörch); Spitzbergen (Reeve); Barent's Sea (d'Urban); Norway, 30 to 100 fathoms; Behring's Strait (Sars); Japan (Lischke).

Fossil.—Older and younger glacial beds, Norway (M. Sars).

This specimen is quite a young shell, having only six whorls, *i.e.*, three beyond the embryonic apex, but on the whole I believe it to be this species. The apex is certainly coarser even than usual, the shoulder below the suture is higher, the first spiral is broader, the third smaller, and those on the base much more numerous than is customary; but all these, especially the form of the embryonic apex, are exceedingly variable features in this species. It is a decidedly Arctic form, and has been traced along the Siberian coast to Japan. I have quoted G. O. Sars for its presence at Behring's Strait, but Dall, in his List of Mollusca from that region, does not mention it. Its occurrence so far south in the Atlantic as the coast of Portugal is interesting.

The identity of this species with the *Fusus antiquus*, Linne, is very strongly supported, and is an opinion deserving the utmost respect. If it has not been followed here, the reason is, that though my opportunities for comparison have been rather limited, I have an impression that the apex in the two species is different. On this point I had hoped for fuller information from Mr Herman Friele of Bergen, in his great work on the Mollusca of the Norwegian Northern Expedition, some of the

plates of which he kindly sent me. The apex of the Challenger specimen is very much larger than any he figures, and in these circumstances I can only fall back on my own previous observations.

13. *Fusus* (*Neptunea*) *mandarinus*, Duclos.

Fusus mandarinus, Duclos, Mag. de Zool., 1831, pl. viii.
„ *zelandicus*, Quoy and Gaimard, "Astrolabe," Zool., 1832, vol. ii. p. 500, pl. xxxiv. figs. 5, 6.
„ „ Kiener, Iconog., p. 27, sp. 21, pl. xiv. fig. 1.
„ *mandarinus*, Lamarck, Anim. s. vert. (ed. Desh.), vol. ix. p. 471, sp. 48.
„ „ Reeve, Conch. Icon., vol. iv. pl. iv. fig. 8.
„ „ Sowerby, Thes. Conch., pt. 35, p. 82, sp. 70, pl. ccccxi. (vii. *Gen.*) fig. 71.
„ „ Hutton, Catalogue Mar. Moll. N. Zealand, p. 8.
„ „ v. Martens, Critical List, p. 18.
Neptunea zelandica, Hutton, Man. N. Zeal. Moll., p. 50.
„ (*Austrofusus*) *mandarinus*, Kobelt, Conch. Cab. (ed. Küster), p. 137, pl. xliv. figs. 2, 3.
Siphonalia (*Austrofusus*) *mandarina*, Tryon, Manual, vol. iii. p. 138, pl. lvi. fig. 384, pl. lvii. fig. 385.

Station 166. June 23, 1874. Lat. 38° 50′ S., long. 169° 20′ E. About 200 miles west of Cape Farewell, New Zealand. 275 fathoms. Globigerina ooze.

Station 167A. June 27, 1874. Lat. 41° 4′ S., long. 174° 19′ E. Queen Charlotte Sound, near Long Island, New Zealand. 10 fathoms. Mud.

Habitat.—New Zealand.

This is a small, perhaps immature form of this species, supplying a transition link with *Neptunea dilatata*, Quoy and Gaimard, being more carinated and shouldered at the carina than the type.

14. *Fusus* (*Neptunea*) *nodosus* (Martyn).

Buccinum nodosum, Martyn, Univ. Conch., vol. i. fig. 5, and (ed. Chenu), pl. ii. fig. 2.
Murex raphanus, Chemnitz, Conch. Cab., vol. x. pl. clxiii. fig. 1558.
Fusus raphanus, Lamarck, Anim. s. vert., vol. vii. p. 128, and (ed. Desh.) vol. ix. p. 454, sp. 20 (but in note by Deshayes, *Fusus nodosus*).
„ „ Kiener, Iconog., p. 33, sp. 26, pl. xxi. fig. 2.
„ *nodosus*, Reeve, Conch. Icon., vol. iv. pl. xi. fig. 61.
Buccinum raphanus, Quoy and Gaimard, "Astrolabe," Zool., vol. ii. p. 428, pl. iii. figs. 3–6.
Fusus raphanus, Gray, Fig. Moll. Anim., vol. i. pl. ix. fig. 1.
Neptunea (*Austrofusus*) *nodosus*, Kobelt, Conch. Cab. (ed. Küster), p. 133, pl. xxxii. fig. 1.
Fusus raphanus, Sowerby, Thes. Conch., No. 35, p. 87, pl. ccccxvi. (xii. *Gen.*) figs. 136, 137.
„ „ Hutton, Manual, p. 50.
Siphonalia nodosa, Tryon, Manual, vol. iii. p. 136, pl. lvi. figs. 376, 377, pl. lviii. fig. 398.

Station 167A. June 27, 1874. Lat. 41° 4′ S., long. 174° 19′ E. Queen Charlotte Sound, near Long Island, New Zealand. 10 fathoms. Mud.

Habitat.—Cook Strait. Abundant in the North Island; not found south of Bank Peninsula (Hutton).

15. *Fusus valedictus*,[1] n. sp. (Pl. XVII. fig. 7).

Station 166. June 23, 1874. Lat. 38° 50′ S., long. 169° 20′ E. 200 miles west of Cape Farewell, New Zealand. 275 fathoms. Globigerina ooze.

Shell.—Strong, feebly ribbed, regularly spiralled, fusiform, attenuated, with a long body whorl, a subscalar spire, a small mamillated apex, and a protracted snout. *Sculpture:* Longitudinals—there are on each whorl 10 or 12 short oblique riblets, which do not extend to either suture, and are rather flattish elongated tubercles than ribs; they are parted by shallow open furrows; down the spire they become feebler, and all but disappear on the last whorl; besides these riblets there are numerous coarsish lines of growth. Spirals—the surface is scored with distinct equal flat threadlets, pretty equally parted by flat shallow furrows of about three times their width; of these threadlets there are 9 or 10 on the penultimate whorl; they are absent immediately below the suture. *Colour* white, but the shell is bleached. *Spire* high, subscalarly conical. *Apex* small, mamillary, the extreme tip immersed; it consists of $2\frac{1}{2}$ smooth rounded whorls. *Whorls* $8\frac{1}{2}$ in all; they are slightly carinated by the prominence of the tubercled riblets, shouldered and a very little concave below the suture, and cylindrical, but to a very small extent contracted into the lower suture; the last is somewhat elongated, rounded, but hardly tumid, and with a long contracted concave base. *Suture* linear, in a broad open depression. *Mouth* oval, oblique, bluntly pointed above, and running out into an open, very oblique, longish canal in front. *Outer lip* strong and blunt, very feebly scored within, with long narrow teeth; from its insertion it retreats very much, here it is flattish; in the middle it runs straight in the line of the axis. *Inner lip* concave to the beginning of the canal, where it is angulated and has a twisted keel; on the body there is a thin glaze, which becomes a little thicker at the side of the canal. H. 2 in. B. 0·85. Penultimate whorl, height 0·37. Mouth, height 1·2, breadth 0·39.

This species is like the young of *Fusus mandarinus*, Duclos, but is much more narrow and compact, of many more whorls, more numerous riblets, and wants the many intermediate spiral threadlets which lie in the interstices of that species; the apex, too, is not nearly so large, and has fewer whorls. It is a very much smaller species.

16. *Fusus* (*Neptunea*) *calathiscus*, Watson (Pl. XII. fig. 3).

Fusus (*Sipho*) *calathiscus*, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 375.

Station 147. December 30, 1873. Lat. 46° 16′ S., long. 48° 27′ E. Between Marion Island and the Crozets. 1600 fathoms. Diatom ooze. Bottom temperature 34·2° F.

Shell.—Thin, white, tumid, fusiform, with a high scalar spire, and a rounded base prolonged into a short, small-pointed, lop-sided snout. *Sculpture:* Longitudinals—there

[1] The name is taken from Cape Farewell.

are very many close-set lines of growth: the surface of the thin membranaceous epidermis is very finely and sharply wrinkled, so as to project in very fine lamellæ. Spirals—there are on the upper whorls 7 to 8 narrow, rounded threads, parted by wider furrows which are very shallow. The spirals become feebler and sparser on the last whorl, with fainter threads in the intervals. *Colour* porcellanous white under the pale yellowish-white epidermis. *Spire* high, blunt, scalar. *Apex* eroded. *Whorls* about 6, well rounded, slightly flattened at the top, and a little contracted toward the bottom; the last is rather tumid. *Suture* strong and impressed. *Mouth* oval, rounded above, pointed at the canal, which is very short, wide, and a little oblique. *Outer lip* thin, well rounded, patulous, and straight along the canal. *Inner lip* concave from the top of the mouth to the point of the pillar, which is straight, short, rather narrow, and obliquely cut off in front. A very thin glaze runs across the body and down the pillar. *Operculum* thin, pale yellow, with very regular curves of growth arching from side to side; in form it resembles a long narrow wedge with a terminal apex. H. 1·25 in. B. 0·7. Penultimate whorl, height 0·3 in. Mouth, height 0·77, breadth 0·4.

This species strongly resembles *Buccinopsis canaliculata*, Dall, of which he kindly sent me a specimen from Behring's Straits. It has, in particular, the deeply impressed or canaliculated suture of that form; but it is much thinner, has higher and more tumid whorls, with much finer sculpture, and it has not the lanuginous epidermis of that species.

17. *Fusus* (*Neptunea*) *setosus*, Watson (Pl. XII. fig. 4).

Fusus (*Sipho*) *setosus*, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 376.

Station 146. December 29, 1873. Lat. 46° 46′ S., long. 45° 31′ E. Between Marion Island and the Crozets. 1375 fathoms. Globigerina ooze. Bottom temperature 35·6° F.

Station 147. December 30, 1873. Lat. 46° 16′ S., long. 48° 27′ E. Between Marion Island and the Crozets. 1600 fathoms. Diatom ooze. Bottom temperature 34·2° F.

Shell.—Thin, white, tumid, setose, with longitudinal and spiral threads, fusiform, with a scalar spire, and a rounded base produced into a short, prominent, lop-sided snout. *Sculpture:* Longitudinals—there are on the upper whorls many very regular, rounded threads, which become fainter on the later whorls; besides these, the epidermis is closely wrinkled in minute sharp lamellæ. Spirals—there are on the upper whorls 5 to 6 rounded threads parted by wider interstices; these are of about the same strength as the longitudinals; and their intersection forms a very regular lattice-work, with a short stiff bristle at their crossing-points; on the last whorl these bristles are crowded close together so as to be contiguous. *Colour* porcellanous white under the greyish-yellow epidermis. *Spire* high, blunt, scalar. *Apex* eroded. *Whorls* about 6, well rounded, slightly flattened at the top, and constricted below; the last is rather tumid. *Suture* strong and impressed.

Mouth rounded above, with a slight angle at the top, and a short open canal below that runs out obliquely across the point of the pillar. *Outer lip* thin, well rounded, straight and patulous along the canal. *Inner lip* concave, with a very short direct pillar, which is obliquely cut off and twisted in front; a very thin narrow glaze lies on the body and pillar. H. 1·1 in. B. 0·6. Penultimate whorl, height 0·22. Mouth, height 0·44, breadth 0·33.

It is very possible this and the preceding may be the same species, and may be ultimately united to *Buccinopsis canaliculata*, Dall; but the differences in form and in epidermis make their separation inevitable till a fuller series of specimens perhaps supply links of connection.

18. *Fusus* (*Neptunea*) *scalaris*, Watson (Pl. XII. fig. 5).

Fusus (*Sipho*) *scalaris*, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 377.

Station 305A. January 1, 1876. Lat. 47° 48′ 30″ S., long. 70° 47′ W. North-west Patagonia. 125 fathoms. Blue mud.

Shell.—Small, thin, porcellanous white, with feeble longitudinals and faint spirals, a high, conical, scalar spire, small mamillary apex, a short, rounded, contracted base, and a small, lop-sided, slightly reverted, emarginate snout. *Sculpture:* Longitudinals—there are about 15 rounded, slightly tumid ribs, which originate below the upper suture, and hardly reach the lower, and on the base die out; they are parted by broad, rounded, shallow furrows; the surface is all scored with sharp unequal lines of growth. Spirals—near the top of the whorls is a blunt angulation; above this obsoletely, and below it not very strongly, the surface is scored by broad, flatly rounded threads parted by narrow, very slightly depressed furrows; these threads and furrows do not appear on the snout. *Colour* porcellanous white. *Spire* high, conical, and scalar. *Apex* small, mamillate, with a very small, slightly depressed tip; it consists of about two smooth, rounded embryonic whorls. *Whorls* 7, with a high, slightly declining, and rounded shoulder, defined by a blunt angulation, below which the whorls are somewhat cylindrically conical, contracting slightly into the lower whorl. *Suture* impressed, but rounded and open, the lower whorl lapping up on the upper, and the true suture being linear. *Mouth* oval, bluntly pointed above, and produced below into the short, open oblique canal. *Outer lip* a little receding above on the shoulder, bluntly angulated at the keel, below which point it is arched, with a very slight constriction at the short, open, and slightly reverted snout. *Inner lip* very slightly concave above, straight on the short pillar, and oblique along the canal, where there is a twist on the point of the pillar; it is bordered by a narrow thin glaze, which runs out almost to the extreme point of the shell. H. 0·5 in. B. 0·22. Penultimate whorl, height 0·1. Mouth, height 0·23, breadth 0·12.

The generic place of this and the three following species is very doubtful; but the mouth is rather too wide to justify their being classed with the *Pyrene* group of *Columbella*, which the general aspect of the shell suggests as their place.

19. *Fusus* (*Neptunea*) *regulus*, Watson (Pl. XII. fig. 7).

Fusus (*Sipho*) *regulus*, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 378.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Shell.—Small, thin, porcellanous white, with fine riblets and delicate spirals, a rather high, subscalar spire, a large blunt mamillary apex, deep suture, small body, a short rounded contracted base, and a small, lop-sided, emarginate snout. *Sculpture:* Longitudinals—there are on the last whorl about 25 narrow, sharply raised, flexuous, little ribs, parted by flat furrows of twice their breadth; these decrease in number up the spire; they die out toward the point of the base; they bend quickly to the right below the suture, advancing to the left lower down: the furrows and snout are scored with fine lines of growth. Spirals—there are feeble, rounded, sparsely-set threads, of which about eight on the penultimate whorl; immediately below the suture they are very faint, but are present. *Colour* yellowish porcellanous white. *Spire* high, rather cylindrically conical. *Apex* blunt, mamillary, with an exceedingly small impressed tip; it consists of two globose, smooth, embryonic whorls. *Whorls* 5½ to 6 in all, with a rounded shoulder defined by a very slight angulation, below which the whorls are subcylindrical; the last is scarcely tumid, with a rounded contracted base prolonged into a stumpy, slightly reverted, emarginate snout. *Suture* sharp, impressed, rather deep, horizontal. *Mouth* oval, slightly angulated above, and produced below into a short, broad, open, and somewhat oblique canal. *Outer lip* thin, a little expanded, arched, advancing below, contracted at the canal; there is at the top a faint approach to a sinus. *Inner lip* concave above, straight on the pillar, which is in front little oblique, but has a slight twist; a thin narrow glaze defines it throughout. H. 0·28 in. B. 0·13. Penultimate whorl, height 0·08. Mouth, height 0·14, breadth 0·09.

This species has some faint resemblance to *Columbella* (*Pyrene*) *costulata*, Cantr., but is less compact, has a more impressed suture and more rounded whorls, wants the densely set minute spirals, and has a longer snout; the apex, too, differs from that species, in which the tip rises in a minute point, while here it is impressed.

20. *Fusus* (*Neptunea*) *edwardiensis*, Watson (Pl. XII. fig. 6).

Fusus (*Sipho*) *edwardiensis*, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 379.

Station 145. December 27, 1873. Lat. 46° 43′ S., long. 38° 4′ 30″ E. Between Marion Island and Prince Edward Island. 140 fathoms. Volcanic sand.

Shell.—Small, thin, porcellanous white, feebly ribbed and faintly spiralled, with high spire, blunt apex, rounded whorls, a short contracted base, and a small snout. *Sculpture:* There are on the penultimate whorl over 20 rounded, oblique, and rather straight riblets, parted by similar, rounded furrows; these are obsolete on the last whorl, and are much fewer in number higher up the spire: the lines of growth are very fine. Spirals—the surface is covered with very faint, rounded, close-set threads. *Colour* porcellanous white, with a dead surface. *Spire* high, conical, subscalar. *Apex* blunt, rounded, mamillary, with an immersed tip; it consists of two smooth, globose, embryonic whorls. *Whorls* 5½; they are suddenly contracted above into the suture, below this they are convexly cylindrical, with a very slight contraction at the bottom; the last is a very little tumid, with a rounded conical base produced into a very short, lop-sided, emarginate snout. *Suture* rather deep and sharp. *Mouth* oval, hardly angulated above, and produced below into the short, oblique, open canal. *Outer lip* well arched; there is a feeble sinus near the suture, and a slight prominence in front. *Inner lip* concave above, straight on the pillar, the point of which is twisted and obliquely truncate; it is defined by a thin narrow glaze. H. 0·25 in. B. 0·11. Penultimate whorl, height 0·06. Mouth, height 0·12, breadth 0·05.

The half-grown shells of *Columbella* (*Pyrene*) *holbölli*, Möller, which often present feeble riblets, have some faint resemblance to this species, but these have a much sharper apex and a less impressed suture.

21. *Fusus* (*Siphonorbis*) *amblyterus*, n. sp. (Pl. XVII. fig. 8).

Station II. January 13, 1873. Lat. 38° 10′ N., long. 9° 14′ W. Off Setubal, Portugal. 470 fathoms. Green mud.

Shell.—Thin, unribbed, unequally spiralled, fusiform, narrow, body whorl (probably) small, a subscalar spire, a blunt rounded apex, whose tip is minute and impressed. *Sculpture:* The whole surface is densely scored with prominent hair-like curved lines of growth; these are least crowded at the top of the spire, where they radiate out from the apex like fine riblets. Spirals—the whole surface is scored with somewhat remote threads, each of which tends along its crest to split into two; two of these form a double carination at the periphery, which lies a little below the middle of each whorl; the shallow rounded furrows which part all these threads are 4 or 5 times their width, and have often a minute thread in the bottom. *Colour* ruddyish cream. *Spire* high, subscalarly conical *Apex* smallish, blunt, and rounded, with a minute immersed tip; the first 2 whorls are almost discoidal. *Whorls* 8, but at least one more has been broken off; they are bicarinated, steeply shouldered, cylindrical between the keels, and contracted below. *Suture* linear, in a broad open depression. *Mouth* club-shaped. *Pillar* twisted. H. 1·24 in. B. 0·57. Mouth, length 0·65, breadth 0·3.

The solitary specimen of this species is so badly broken that the measurements and the description of all about the mouth is impossible; but the whole character of the shell is so strongly marked that the recognition of the species will always be easy. It is something like *Fusus* (*Siphonorbis*) *dalli*, Friele (not Watson), but is a bigger shell, with a much larger and more flatly rounded apex, the whorls are not nearly so convex, the shoulder is much more sloping, the two large threads which form the carina are both stronger and more prominent than any on that species, and the finer spirals are very much more frequent. The "Porcupine" Expedition in 1870 got three young specimens of this species at Stations 16 and 17, close to Setubal, in from 740 to 1095 fathoms.

22. *Fusus* (*Sipho*) *libratus*, Watson (Pl. XII. fig. 8).

Fusus (*Neptunea*) *dalli*, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 379.

Station 173. July 24, 1874. Lat. 19° 9′ S., long. 179° 42′ E. Off Matuku, Fiji. 315 fathoms. Coral mud.

Shell.—Thin, porcellanous, pale ruddyish yellow, fusiform, long, of nearly equal size above and below the periphery, finely ribbed and spiralled, with compressed and constricted whorls, and a club-shaped mouth. *Sculpture:* Longitudinals—the whorls are crossed by narrow little ribs and furrows, of which there are about 11 on the upper whorls and 19 to 20 on the penultimate, becoming increasingly feeble as they approach the mouth; they harmonise completely with the course of the dense, clear, and sharp hair-like lines of growth. Spirals—there are narrow, prominent spiral threads, of which two near the bottom of the whorls are somewhat stronger than the others; the furrow which parts them is also a little wider and deeper than the rest; below this is a small but rather sudden constriction of the whorls into the suture; the spirals in crossing the longitudinal ribs are thrown out into blunt white linear points; the spirals on the base and snout are more regular and equal than the others. *Colour* a pale ruddyish yellow, with a fine roughened surface. *Spire* high and conical. *Apex* broken, but apparently very small, sharp, and smooth. *Whorls*, 8 remain; probably the broken embryonic apex consisted of two more; they are convex, with a slight slow contraction above and a small sudden constriction below; the last is small, long, with rounded outlines, and produced into a long, rather lop-sided and slightly twisted snout. *Suture* fine, sharp, impressed. *Mouth* long, club-shaped, being oblong, pointed above, and produced in front into a longish canal. *Outer lip* thin, with a slight, white, internal varix, not much arched, patulous in front, where its line is concave, and then straight along the canal. *Inner lip* short and scarcely convex on the body, hollowed at the base of the pillar, which is narrow, straight, and cut off in front, on a long, slightly oblique, and somewhat twisted line; the glazing which edges it is very thin and narrow. H. 1·27 in. B. 0·5. Penultimate whorl, height 0·2. Mouth, height 0·7, breadth 0·24.

The general aspect of this shell is very much that of a *Fasciolaria;* but the pillar has no plaits. It is not in form unlike the young of *Fusus rostratus*, Olivi; but the base is much longer, and the snout shorter, and the constriction at the bottom of the whorls is not found in that species; in these respects it has more resemblance to *Fusus syracusanus*, Lam., in which, however, the whole sculpture is very unlike. It resembles perhaps most of all *Fusus filosus*, A. Ad., from the Chinese seas, but is still slimmer in its outlines.

I had called this species after my friend Mr W. H. Dall, of the Smithsonian Museum, Washington, but Mr Friele of Bergen seems to have run me close in the friendly thought, and has called another species of *Neptunea* by the same name. Both species were published in 1882; mine in a paper read to the Linnean Society of London on March 16, and issued in their journal on June 12. When Mr Friele's came out in that year I do not know. Now, however, one of the two applications of Mr Dall's name had better cease, and, as I have the opportunity, I may be allowed to alter the name of my species. This I have done above, with a reference to the balance there is between the length of the shell above and below the periphery.

23. *Fusus* (*Sipho*) *futile*, Watson (Pl. XII. fig. 9).

Fusus (*Neptunea*) *futile*, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 381.

Station 150. February 2, 1874. Lat. 52° 4′ S., long. 71° 22′ E. Between Kerguelen and Heard Islands. 150 fathoms. Coarse gravel. Bottom temperature 35·2° F.

Shell.—Thin, pale, fusiform, long, very bluntly ribbed and with equal spiral threads; the whorls are rounded, the suture rather deep and oblique, the mouth club-shaped, the pillar small and somewhat twisted. *Sculpture:* In the middle of the whorls are low rounded riblets, which extend to neither suture; they are parted by shallow rounded furrows broader than the ribs; the surface is scored with strongish hair-like lines of growth. Spirals—there are clear well-rounded threads, about 9 on the penultimate, and fewer on each preceding whorl; on the last whorl they are not so equal as on the others, being somewhat stronger in the middle of the whorl; they are parted by squarish shallow furrows. *Colour* pale greyish white; but the specimen is bleached. *Spire* high and conical. *Apex* small, smooth, rounded and slightly depressed. *Whorls* 7, of slow increase, rounded, contracted above, slightly so below; the last is small, rounded on the base, and prolonged into a small and somewhat twisted snout. *Suture* oblique, impressed, minutely channelled. *Mouth* club-shaped, being oval above, and produced into a longish canal below. *Outer lip* much broken. *Inner lip:* there is a very narrow thin glaze on the body and pillar, of which the point is bent upwards and twisted. H. 0·74 in. B. 0·3. Penultimate whorl, height 0·15. Mouth, height 0·36, breadth 0·17.

This species has some resemblance to the young of *Fusus* (*Sipho*) *lachesis*, Mörch, but has the apex much smaller, is in form more conical, has the suture more oblique, possesses longitudinal ribs, and has the spirals stronger. Compared with *Fusus* (*Sipho*) *latericeus*, Möll., the apex is much smaller, the whorls are of much slower increase, are more rounded, and are more contracted above,

the suture is deeper and more oblique, the ribs are weaker, the spirals are stronger, and the snout is longer and more twisted than in that species. Compared with *Fusus* (*Siphonorbis*) *undulata*, Friele (which I only know by the admirable plate kindly sent me by the author), this *Fusus futile* is smaller in the apex, less cylindrical and more conical, the whorls are less rounded, and difference in breadth below and above is much greater; the suture, too, is much less impressed and more oblique.

24. *Fusus* (*Sipho*) ——, n. sp. (?)

Fusus (*Sipho*) ——, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 374.

Station 47. May 7, 1873. Lat. 41° 14′ N., long. 65° 45′ W. Off Halifax. 1340 fathoms. Blue mud.

The four specimens of this species are in bad condition, being dead, broken, and not full-grown. It resembles *Fusus cinereus*, Say (see Binney, Gould's Invert. Mass. p. 370, fig. 637) = *Buccinum plicosum*, Menke (see Philippi, Abbild., &c., i. p. 109, pl. xxvi. fig. 8); but its longitudinal ribs are more numerous, and, instead of being convex to the left as in that species, they are convex to the right. The corresponding whorls here are smaller; and it has no approach to an umbilicus. It has also some resemblance to *Buccinum obsoletum*, Say = *Nassa noveboracensis*, Wood, Index, p. 214, Suppl., pl. iv. fig. 26, but is very obviously different. It does not seem to be any of Verrill's new species from deep water off the New England coast.

25. *Fusus* (*Sipho*) *pyrrhostoma*, Watson (Pl. XII. fig. 2).

Fusus (*Sipho*) *pyrrhostoma*, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 374.

Station 141. December 17, 1873. Lat. 34° 41′ S., long. 18° 36′ E. 20 miles S.S.E. of Cape of Good Hope. 98 fathoms. Green sand. Bottom temperature 49·5° F.

Shell.—Fusiform, with a shortish base, a high spire, and a bent mamillary apex; ribbed, and with rather fine spiral threads; light brown and thin. *Sculpture:* Longitudinals—each whorl is crossed by about 15 concave, sinuous, narrow, and little-raised ribs, which on the last whorl die out on the base. The fine hair-like lines of growth correspond with the curves of the ribs. Spirals—below the suture there is a slightly constricted area, as in the Pleurotomidæ; below this is a very blunt indistinct carination. The whole surface is covered with slight rounded spiral threads, which are markedly stronger and wider parted on the base and snout. *Colour* a ruddy brownish yellow, with a very thin, hard, smooth, persistent epidermis. *Spire* high, conical. *Apex* bent, cylindrical, the first and second whorls being nearly of a size, and both rather swollen. *Whorls* 7, convex, slightly constricted above, very faintly and obtusely angulated above the middle, and contracted below; the last is slightly ventricose, with a rounded base, produced into a very lop-sided triangular snout. *Suture* small but distinct, being slightly impressed. *Mouth* crescentic, pointed above, and prolonged below into a short oblique

canal. *Outer lip* thin and sharp, slightly sinuated above, rounded and prominent in the middle, and retreating along the canal. *Inner lip* flat above, concave at the base of the pillar, which is straight, longish, conical, and obliquely cut off in front: a thinnish, narrow, sharply-defined pad of glaze extends along the whole length of the lip. *Operculum* subtriangular, with the apex at the lower inner point, thin but strong, brownish yellow. H. 1·55 in. B. 0·6. Penultimate whorl, height 0·28. Mouth, height 0·78, breadth 0·33.

This species greatly resembles *Fusus* (*Sipho*) *kröyeri*, Möller; but is smaller, and has a contraction below the suture absent in that; the whorls are less tumid, the longitudinal ribs are much smaller and less curved; the lines of growth correspond with the ribs instead of cutting obliquely across them; the spiral sculpture, too, is more raised and less regular. The apex in the Challenger specimen is somewhat eroded, but is distinctly more cylindrical, the first and second whorls being much more nearly equal than in Möller's species.

26. *Fusus* (*Euthria*) *chloroticus*, v. Martens. (Pl. XVIII. fig. 8).

Euthria chlorotica, E. v. Martens, Bericht Naturforsch. Fr. Berlin, Feb. 19, 1878, p. 22, No. 2.
" " Studer, Kerguelen Fauna, Archiv f. Naturgesch., 36th year, vol. i. p. 136.

Station 149C. January 19, 1874. Balfour Bay, Kerguelen. 20 to 60 fathoms. Volcanic mud.

Station 149D. January 20, 1874. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Station 149F. January 27, 1874. Rhodes Bay, Kerguelen. 95 fathoms. Volcanic mud.

Station 149J. Off Cumberland Bay, Kerguelen. 105 fathoms. Volcanic mud.

Habitat.—Kerguelen Island, 120 fathoms (v. Martens).

The operculum of this species is not that of a *Euthria*, being long, pointed, and with a subspiral nucleus; the radula, however, is still more unlike that of *Sipho*. I am, therefore, content to follow v. Martens' classification; though the canal of the shell is not long and can hardly be said to be recurved.

27. *Fusus* (*Euthria*) *fuscatus*, Bruguière.

Buccinum fuscatum, Bruguière, Encycl. méthod., vol. i. p. 282, sp. 55.
" " Lamarck, Anim. s. vert., vol. vii. p. 268, and (ed. Desh.) vol. x. p. 164, sp. 7.
" " Kiener, Iconog., p. 20, sp. 21, pl. viii. fig. 24.
Euthria fuscata, Tryon, Manual, vol. iii. p. 152, pl. lxxii. fig. 237 (*pessime*).

Station 149B. January 17, 1874. Lat. 49° 28′ S., long. 70° 30′ E. Kerguelen, near entrance to Royal Sound. 25 fathoms. Volcanic mud.

Station 315. January 26–28, 1876. Lat. 51° 40′ S., long. 57° 50′ W. Port William, Falkland Islands. 5 to 12 fathoms. Sand and gravel.

Station 316. February 3, 1876. Lat. 51° 32′ S., long. 58° 6′ W. Port Louis, Falkland Islands. 4 to 5 fathoms. Mud.

Habitat.—Peru.

The operculum of this species, like that of *Fusus* (*Colus*) *hanleyi*, Ang., is slightly subspiral, the nucleus not being apical, but somewhat turned round. I regret having failed to get young specimens of the species, and that all the specimens I have seen have the upper whorls a little rubbed. This has made the identification of the specimen from Station 149B above somewhat doubtful, the shell being not quite full-grown and very fresh. The spiral threads are much sharper, and this of itself gives the impression of a different texture of shell. The longitudinal riblets are much weaker, and this considerably affects the form of the whorls, which are above more conical and less prominent, while below they are less cylindrical. On the whole, however, it would be difficult to part them without a fuller series of specimens. [On revision I feel quite sure this identification is right.]

28. *Fusus* (*Metula*) *philippinarum*, Watson (Pl. XII. fig. 1).

Fusus (*Metula*) *philippinarum*, Watson, Prelim. Report, pt. 14, Journ. Linn. Soc. Lond., vol. xvi. p. 373.

Station 210. January 25, 1875. Lat. 9° 26′ N., long. 123° 45′ E. Philippines. 375 fathoms. Blue mud. Bottom temperature 54°·1 F.

Shell.—Strong, porcellanous, pale ruddy brown, fusiform, long, subscalar, with feeble ribs and with spiral threads; the whorls are slightly angulated; the mouth long, with a slight emargination above, and an open triangular canal in front. *Sculpture:* Longitudinals—there are on the upper whorls about 15 small, sharpish, straight, bluntly mucronated ribs, which are feeble on the shoulder beneath the suture, but stronger below; on the later whorls these are less distinct and more oblique, becoming flexuous on the base; these correspond exactly with the delicate crimpings of the lines of growth. Spirals—the whole surface is covered with fine, regular, and equal narrow threads and broader furrows; of these, on the penultimate whorl there are about 15, the centre one of which is thrown into prominence by a slight angulation, very marked on the earlier but feeble on the later whorls. *Colour* pale ruddy brown, with a flinty pellucidness, especially toward the apex, and more of whiteness toward the point of the snout. *Spire* high, conical, subscalar. *Apex* contracting abruptly to a small raised point, formed by about three smooth rounded embryonic whorls, which are not sharply distinguished from those which follow, the regular sculpture making its appearance gradually. *Whorls* 8 in all; the upper ones have a sloping shoulder, are angulated in the middle, and are cylindrical or slightly contracted below; the last is more rounded, and is produced into a long and pointed base, ending in a triangular conical snout. *Suture* slightly channelled. *Mouth* long and pear-shaped. *Outer lip* thickened internally with a strongish white varix,

between which and the sharp patulous edge the spiral threads of the exterior sculpture are just visible; it is very slightly emarginated above near the body, and well arched throughout, till along the canal, where it is straight but oblique. *Inner lip* straight across the body, hollow in the middle, and straight but unusually oblique down the whole pillar, which is not in the least twisted: a thin layer of glaze narrowly spreads along its whole length. *Operculum* thin, subtriangular, pointed behind, and bluntly so in front at the apex, which is subterminal, but slightly coiled in to the inner side. H. 0·9 in. B. 0·39. Penultimate whorl, height 0·16. Mouth, height 0·52, breadth 0·2.

This specimen is classed as a *Metula* with considerable doubt: the outer lip is not thickened externally, nor distinctly toothed internally; but these features are perhaps due to the shell not being quite full-grown; the mouth, too, is a little broad for the genus. The operculum of *Metula* is unknown to me; but Adams' figure of the operculum of *Cantharus* is in form very similar (only that in the Challenger species the apex is a little more turned in subspirally), and Troschel confirms Adams' classification here, and puts the two genera in closest collocation. The shell has some faint resemblance to *Pisania reticulata*, A. Ad.

2. *Pyrula*, Lamarck, 1799.

Species.

1. *Pyrula morio* (Linne). 2. *Pyrula ternatana* (Gmelin).

1. *Pyrula morio* (Linne).

Murex morio, Linne, Syst. Nat. (ed. 12), p. 1221, No. 552.
Le Nivar, Adanson, Senegal, p. 141, pl. ix. fig. 31.
Chemnitz, Conch. Cab., vol. iv. p. 139, pl. cxxxix. figs. 1300, 1301.
Fusus morio, Wood, Ind. Test., p. 131, pl. xxvi. fig. 78.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 127, and (ed. Desh.) vol. ix. p. 451, sp. 16.
„ „ Deshayes, Encycl. méthod., vol. ii. (2) p. 155, pl. ccccxxx. fig. 3.
„ „ Kiener, Iconog., p. 56, sp. 46, pl. xxii. fig. 2, and pl. xxiii. fig. 2.
Pyrula morio, Reeve, Conch. Icon., vol. iv. pl. i. fig. 3.
„ „ Hanley, Ipsa Linn. Conch., pp. 300, 523.
„ „ Fischer, Cat. Coq. Guadaloupe, p. 8, sp. 1.
„ „ Kobelt in Conch. Cab. (ed. Küster), p. 35, pl. xxviii. figs. 4, 5, and pl. xxxiii. figs. 4, 5.
„ „ Sowerby, Thes. Conch., pt. 36, p. 102, sp. 13, pl. ccccxviii. figs. 1, 2.
„ „ Tryon, Manual, vol. iii. p. 111, pl. xliii. figs. 228, 229.

July 28, 1873. St Vincent, Cape de Verdes. 7 to 25 fathoms.

Habitat.—East and west sides of the Tropical Atlantic, Senegambia (Adanson), Guadaloupe (Fischer).

2. *Pyrula ternatana* (Gmelin).

Chemnitz, Conch. Cab., vol. iv. p. 153, pl. cxl. figs. 1304, 1305.
Murex ternatanus, Gmelin, p. 3554, No. 107.
" " Wood, Ind. Test., p. 134, pl. xxvii. fig. 116.
" " Dillwyn, vol. ii. p. 738, sp. 113.
Pyrula ternatana, Lamarck, Anim. s. vert., vol. vii. p. 143, and (ed. Desh.) vol. ix. p. 513, sp. 15.
Fusus ternatanus, Deshayes, Encycl. méthod., vol. iii. p. 867, sp. 8, pl. ccccxxix. fig. 6.
Pyrula ternatana, Kiener, Iconog., p. 52, sp. 43, pl. xxvii. (on pl. *Fusus tornatensis*).
" " Reeve, Conch. Icon., vol. iv. pl. ii. fig. 6.
" " Sowerby, Thes. Conch., sp. 36, p. 102, pl. ccccxviii. (*Gen.* i.) fig. 7.
" " Kobelt, Conch. Cab. (ed. Küster), p. 42, pl. v. figs. 4, 5, pl. xxxiii. figs. 1, 2.
Hemifusus ternatanus, Tryon, Manual, vol. iii. p. 112, pl. xliv. fig. 233.

Station 203. October 31, 1874. Lat. 11° 6′ N., long. 123° 9′ E. Philippines. 20 fathoms. Mud.

Habitat.—Ternate (Dillwyn), Philippines (Deshayes).

3. *Buccinum*, Linne, 1767.

Species.

1. *Buccinum albozonatum*, Wats. 2. *Buccinum aquilarum*, Wats.

1. *Buccinum albozonatum*, Watson (Pl. XIII. fig. 7).

Buccinum albozonatum, Watson, Prelim. Report, pt. 13, Journ. Linn. Soc. Lond., vol. xvi. p. 358.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Shell.—Small, thin, fusiform, with a high spire, a short base, and a small snout, of a ruddy brown, tipped and banded with white; it has spiral threads. *Sculpture:* Longitudinals—on the earlier whorls there are some feeble folds below the suture; only sharpish hair-like lines of growth elsewhere. Spirals—over the whole surface there are flat threads with furrows of equal breadth between them: of these, on the penultimate whorl, there are about 10; on the snout they are finer and closer. *Colour* muddy brown, with a transparent white-tipped pillar, and on each whorl a central band. *Spire* high, rather narrow. *Apex* blunt, rounded, with a slightly immersed tip. *Whorls* 6, regularly convex; the last contracts slowly on the base, and is produced into a short, one-sided, slightly expanded, truncated snout. *Suture* rather deeply impressed. *Mouth* largeish, oval, open, straight, bluntly pointed above, produced into a small, short, oblique canal below. *Outer lip* thin, blunt, rather patulous, slightly sinuated and angulated a little way below the suture, and below this flatly arched. *Inner lip:* a very thin and narrow glaze covers the arched body and the straight pillar, which is not thickened or twisted, but is obliquely cut off in front. *Operculum* is intermediate in form between that

of *Buccinum* and *Cominella;* for, as in the latter, the nucleus is at the lower end, but it is not apical, but is within the edge towards the outer margin as in the former. H. 0·4 in. B. 0·18. Penultimate whorl, height 0·1. Mouth, height 0·19, breadth 0·11.

2. *Buccinum (?) aquilarum,*[1] Watson (Pl. XIII. fig. 4).

Buccinum (?) aquilarum, Watson, Prelim. Report, pt. 13, Journ. Linn. Soc. Lond., vol. xvi. p. 359.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. Off San Miguel, Azores. 1000 fathoms. Volcanic mud.

Shell.—Small, thin, white, ventricose, biconical, oval, subscalar, with an oval, slightly oblique mouth, and a short canal. *Sculpture:* Longitudinals—on the upper whorls there are many feeble, close-set, straight riblets, which are very faint and merge into the lines of growth on the last whorl. Spirals—on the whole surface, are fine, rounded, spiral threadlets parted by shallow furrows which are broader than the ribs. *Colour* semi-transparent white, under a thin yellow membranaceous epidermis. *Spire* short, broad, conical, subscalar. *Apex* small, but rounded. *Whorls* 6, slightly flattened above; below this there is a very blunt angulation, and the lower part of each whorl is subcylindrical; the last whorl is ventricose, contracting on the base to a very short, rather lop-sided snout. *Suture* impressed. *Mouth* rather large, oval, rounded at the top, and prolonged below into an oblique, short, open canal. *Outer lip* thin, but not sharp, very bluntly angulated near the top, of regular curve, open, with a very slight basal cut at the point of the pillar. *Inner lip:* a thick layer of glaze, with a prominent edge continuous with the outer lip, runs down parallel to the belly-margin, and is cut off by the oblique canal at the point of the pillar, which is neither swollen nor thickened. H. 0·33 in. B. 0·21. Penultimate whorl, height 0·07. Mouth, height 0·22, breadth 0·13.

This is a perplexing form, in general aspect very like several of the Admetes. Than *Admete ovata*, E. Sm., from Japan, it is very much higher and more attenuated in the spire; than *Admete crispa*, Möller, it is much more tumid, and lower in the spire; than *Admete viridula*, Fabr., it is more delicately sculptured, is higher in the spire, and is of slower increase. The absence of the generic teeth on the pillar and the presence of the slight basal sinus are both features not without parallel in the genus *Admete;* but in all Admetes, so far as known to me, there is a varicose twist at the point of the pillar, between which and the edge of the inner lip lies a more or less distinct umbilical chink or furrow. In this Challenger shell there is no swelling whatever, and scarcely any twist even in the sculpture, and not the slightest approach to an umbilical chink. The absence of the varicose twist is, indeed, rather an objection to putting this species under *Buccinum;* but that genus already accommodates forms still more exceptional than the present one. *Volutharpa* is perhaps nearer; but I do not sufficiently know the limits of that genus to take liberties with it; the absence of an operculum, which seems its only positive claim to generic standing, is a feature out of recognition in the present case.

[1] Açor = (*vulgo*) eagle, whence the name of the islands.

4. *Cominella*, Gray, 1857.

Species.

1. *Cominella porcata* (Gmelin). 2. *Cominella* (*Adamsia*) *typica*, Dunker.

1. *Cominella porcata* (Gmelin).

Chemnitz, Conch. Cab., vol. iv. p. 71, pl. cxxvi. figs. 1213, 1214.
Buccinum porcatum, Gmelin, p. 3494, No. 105.
„ *mexicanum*, Bruguière, Encycl. méthod., vol. i. p. 260, sp. 23.
„ *porcatum*, Dillwyn, Catalogue, vol. ii. p. 635, sp. 113.
Purpura ligata, Lamarck, Anim. s. vert., vol. vii. p. 244, and (ed. Desh.) vol. x. p. 78, sp. 28.
Buccinum porcatum, Lamarck, Anim. s. vert. (ed. Desh.), vol. x. p. 190, sp. 66.
„ *ligatum*, Kiener, Iconog., p. 7, sp. 7, pl. v. fig. 15.
„ „ Reeve, Conch. Icon., vol. iii. pl. iv. fig. 22.
„ „ Krauss, Südafrik. Moll., p. 119, sp. 1.
Cominella porcata, Küster, Conch. Cab. (ed. Küster), p. 5, sp. 4, pl. i. figs. 8, 9, pl. ii. fig. 3.
„ „ v. Martens, Südafrik. Moll., Jahrb. deutsch. Malak. Gesellsch., 1874, p. 136.
„ „ Kobelt, Jahrb. deutsch. malak. Gesellsch. 1878, p. 231, sp. 1.
„ „ Tryon, Manual, vol. iii. p. 202, pl. lxxx. figs. 392, 396, 399, 404.

October 29–December 16, 1873. Simon's Bay, Cape. 10 to 20 fathoms.

Habitat.—Cape of Good Hope (British Museum, &c.)

2. *Cominella* (*Adamsia*) *typica*, Dunker.

Cominella typica, Dunker, Proc. Zool. Soc. Lond., 1856, p. 357.
Adamsia typica, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 192.
„ „ Kobelt, Jahrb. deutsch. malak. Gesellsch., 1878, p. 236, sp. 1.
Urosalpinx tritoniformis, Tryon, Manual, vol. ii. p. 156, pl. xxxix. figs. 488, 491, 496.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
April 23, 1874. Port Jackson, Sydney. 6 to 15 fathoms.

Habitat.—Philippines (Dunker), South Australia (Angas).

Mr Angas says that the "genus" *Adamsia* has the operculum of a *Purpura*, and must therefore be removed from the *Nassinæ*. It would evidently be well to know something more of the relation of the operculum to the life history of a mollusk before adopting it so lightly as has been done for a basis of classification, but in this instance the peculiarity of the operculum comes in satisfactorily to confirm Dunker's original opinion. In the Proc. Zool. Soc. Lond., 1856, p. 357, he had said of this species: "Ad *Cominellas* maxime accedit, a quibus vero aperturæ indole valde differt, cum costa valida in labii superiore parte insidente, qua *Cominellæ* insignes sunt, hæc cochlea plane careat. Preterea sculptura et totus testæ habitus tam singularis est, ut eam pro novi generis typo habendam esse putaverim." Following up this thought of Dunker's, Tenison Woods has proposed *Agnewia* as a new genus for its reception, and *Adamsia adelaidæ*, Ad. and Ang., and *Purpura neglecta*, Ad., have been added to the group. Tryon suppresses *Agnewia* altogether, and classes *Cominella typica*, Dunk., under *Urosalpinx*, holding *Purpura* (*i.e.*, *Urosalpinx*) *tritoniformis*, Blainville, to be identical with, and *Adamsia adelaidæ*, Ad. and Ang., and *Purpura neglecta*, Ang., to be trifling varieties of Dunker's species.

5. *Pisania*, Bivona, 1832.

Species.

1. *Pisania* (*Cantharus*) *lineata* (Gmel.)
2. *Pisania* (*Cantharus*) *undosa* (Linne).

1. *Pisania* (*Cantharus*) *lineata* (Gmelin).

Le Tafon, Adanson, Sénégal, p. 133, pl. ix. fig. 25.
Buccinum lineatum, Gmelin, Syst. Nat., vol. i. p. 3493.
Pollia variegata, Gray, Zool. Beechey's Voy., p. 112.
Buccinum viverratum, Kiener, Iconog., p. 35, pl. x. fig. 35.
„ *tafon*, Lamarck, Anim. s. vert. (ed. Desh.), vol. x. p. 188, sp. 64.
„ *variegatum*, Reeve, Conch. Icon., vol. iii. pl. vii. fig. 48.
„ „ Küster, Conch. Cab. (ed. Küster), p. 71, sp. 86, pl. xiii. fig. 7.
„ *lineatum*, Dunker, Moll. Guinea, p. 19, No. 46.
„ „ Menke, Conch. von St Vincent, Cap Verd, Zeitschrift für Malakozool., 1853, p. 72.
„ „ Reibisch, Moll. Cap Verd, Malakozool. Blätter, 1865, p. 125, No. 67.

July 28–31, 1873. Harbour of St Vincent, Cape de Verdes. 7 to 25 fathoms.

Habitat.—Gorea and Tenerife (Adanson), St Vincent, Sierra Leone, and Buenos Ayres (Menke), Campeche Bay (Reibisch).

2. *Pisania* (*Cantharus*) *undosa* (Linne).

Buccinum undosum, Linne, Syst. Nat. (ed. 12), p. 1203, No. 472.
Nassa undosa, Chemnitz, Conch. Cab., vol. iv. p. 24, pl. cxxii. figs. 1126, 1127, pl. cxxiii. figs. 1135, 1145, 1146.
Buccinum undosum and *Buccinum affine*, Dillwyn, vol. ii. p. 628, sp. 96, 97.
„ „ „ „ Wood, Ind. Test, p. 117, pl. xxiii. figs. 97, 98.
Triton undosum, Lamarck, Anim. s. vert., vol. vii. p. 189, and (ed. Desh.) vol. ix. p. 642, sp. 31 (corrected by Desh. to *Buccinum*).
„ „ Encycl. méthod., vers, pl. ccccxxii. fig. 5.
Buccinum undosum and *Buccinum cinctum*, Quoy and Gaimard, Astrol. Zool., vol. ii. p. 413, pl. xxx. figs. 1–7.
„ „ Kiener, Iconog., p. 39, sp. 40, pl. xii. fig. 41.
„ „ Reeve, Conch. Icon., vol. iii. pl. viii. fig. 55.
„ „ Küster, Conch. Cab. (ed. Küster), p. 31, sp. 35, pl. vii. figs. 3–7.
„ „ Hanley, Ipsa Linn. Conch., pp. 255, 513.
Cantharus (*Tritonidea*) *undosus*, Adams, Genera, vol. i. p. 85, vol. iii. pl. ix. figs. 5 and 5c.
„ „ *undosus*, Troschel, Gebiss, &c., vol. ii. p. 77, pl. vii. fig. 8.
„ „ „ Tryon, Manual, vol. iii. p. 162, pl. lxxiv. figs. 280–282.
Pisania undosa, v. Martens, Moll. Mauritius, &c., p. 240.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Strait of Malacca (Lamarck), Pacific (Kiener), Louisiade Archipelago ("Rattlesnake" Collection), Mindanao, Tonga Islands, Annaa, Fiji Islands, Australia, New Zealand (British Museum), Indian Ocean, Ceylon, Nicobars, Malay Archipelago, Polynesia (v. Martens).

6. *Neobuccinum*, E. Smith, 1877.

Species.

1. *Neobuccinum eatoni*, E. A. Smith. 2. *Neobuccinum vestitum* (v. Martens).

1. *Neobuccinum eatoni*, E. A. Smith.

Buccinopsis eatoni, E. A. Smith, Ann. and Mag. Nat. Hist., July 1875, vol. xvi. p. 68.
Neobuccinum eatoni, E. A. Smith, Phil. Trans. Roy. Soc. (separate impression, p. 3), pl. ix. fig. 1, 1877.
„ „ Studer, Fauna v. Kerguel., Archiv f. Naturg., 35th year, vol. i. p. 129, No. 24.

Station 149. January 9, 1874. Lat. 49° 8′ S., long. 70° 12′ E. Accessible Bay, Kerguelen. 20 to 25 fathoms. Volcanic mud.

Station 149B. January 17, 1874. Lat. 49° 28′ S., long. 70° 30′ E. Off Royal Sound, Kerguelen. 25 fathoms. Volcanic mud.

January 1874. Kerguelen Rocks.

Station 151. February 7, 1874. Lat. 52° 59′ 30″ S., long. 73° 33′ 30″ E. Off Heard Island. 75 fathoms. Volcanic mud.

Habitat.—Swain's Bay and Royal Sound in 3 to 7 fathoms; Betsy Cove down to 5 fathoms (all in Kerguelen).

2. *Neobuccinum vestitum* (v. Martens).

Cominella vestita, v. Martens, Bericht Gesellsch. Naturf. Fr. Berlin, February 19, 1878, p. 23, No. 5.
„ „ Studer, Kerguelen Fauna, Archiv f. Naturg., 35th year, vol. i. p. 129, No. 25.

Station 149. January 9, 1874. Lat. 49° 8′ S., long. 70° 12′ E. Accessible Bay, Kerguelen. 20 to 25 fathoms. Volcanic mud.

Station 149B. January 17, 1874. Lat. 49° 28′ S., long. 70° 30′ E. Off Royal Sound, Kerguelen. 25 fathoms. Volcanic mud.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Station 151. February 7, 1874. Lat. 52° 59′ 30″ S., long. 73° 33′ 30″ E. Off Heard Island. 75 fathoms. Volcanic mud.

Habitat.—Betsy Cove, Kerguelen Island (v. Martens), Betsy Cove, Kerguelen Island, 5 to 7 fathoms (Studer).

In form both of shell and of operculum this species perfectly agrees with the characters of E. Smith's genus *Neobuccinum*. The epidermis is indeed different, being in *Neobuccinum eatoni*, Sm. (which is the type of the genus), smooth and shining, while in this species it is distinctly and irregularly puckered spirally (as is feebly the surface of the shell beneath), and these spiral puckerings are set with short harsh setæ, which are very easily broken off. Such a difference, however, is of no great consequence, nor does the character of the epidermis form a feature of Mr Smith's generic description. In both species the epidermis is curiously caducous; especially is this the case in *Neobuccinum eatoni*. The dentition is practically identical. V. Martens proposed *Chlanidota* as a subgenus for this species, but accompanied it with no definition, so that Smith's genus, which was published in the Royal Society's Philosophical Transactions in 1877, has priority.

7. *Phos*, Montfort, 1810.

Species.

1. *Phos nodicostatus*, A. Ad.
2. *Phos roseatus*, Hinds.
3. *Phos scalarioïdes*, A. Ad.
4. *Phos senticosus*, Linne.
5. *Phos naucratoris*, Wats.
6. *Phos bathyketes*, Wats.
7. *Phos smithi*, n. sp.
8. *Phos* (*Strongylocera*) *sculptilis*, A. Ad.
9. *Phos* (*Strongylocera*) *angulatus*, Sow.

1. *Phos nodicostatus*, A. Adams.

Phos nodicostatus, A. Adams, Proc. Zool. Soc. Lond., 1850, p. 154, sp. 17.
„ „ Sowerby, Thes. Conch., vol. iii. pt. 19, p. 93, sp. 28, pl. ccxxii. fig. 47.
„ „ E. A. Smith, "Alert" Collections, p. 496, No. 37.

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ W. Inside the reef off Nukalofa, Tongatabu. 18 fathoms. Coral mud.

Habitat.—Island of Ticao, Philippines (British Museum).

2. *Phos roseatus*, Hinds.

Phos roseatus, Hinds, "Sulphur" (Zool.), p. 39, No. 160, pl. x. figs. 9, 10.
„ „ A. Adams, Proc. Zool. Soc. Lond., 1850, p. 153, sp. 9.
„ „ Sowerby, Thes. Conch., vol. iii. pt. 19, p. 90, sp. 6, pl. ccxxi. figs. 1–3.
„ „ E. A. Smith, Proc. Zool. Soc. Lond., 1878, p. 811.
„ „ Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 176, No. 28.

September 18, 1874. Arrou Islands, west of Papua.

Station 208. January 17, 1875. Lat. 11° 37′ N., long. 123° 31′ E. Philippine Islands. 18 fathoms. Blue mud.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Off Malanipa, Basilan Straits, Philippine Islands. 10 to 20 fathoms. Sand.

Habitat.—Philippines and Moluccas (Sowerby), north coast of Sumatra (Adams), Andaman Islands (Smith), island of Burias and Puerto Galero (British Museum), Darnley Island, Torres Strait, 30 fathoms (Brazier).

3. *Phos scalarioïdes*, A. Adams.

Phos scalarioïdes, A. Adams, Proc. Zool. Soc. Lond., 1850, p. 154, sp. 15.
" " Sowerby, Thes. Conch., pt. 19, vol. iii. p. 90, sp. 4, pl. ccxxi. fig. 13.
" " Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 176, No. 29.
" " E. A. Smith, "Alert" Collections, p. 49, No. 32.

September 8, 1874. Cape York, off Albany Island, Torres Strait. 3 to 12 fathoms.

Habitat—?—(A. Adams). None is given in the British Museum. North-East Australia, 30 fathoms; Cape York, 11 fathoms; Darnley Island, Torres Strait, 20 to 30 fathoms; Bet and Gue Islands, Torres Strait, 11 fathoms (Brazier).

4. *Phos senticosus*, (Linne).

Murex senticosus, Linne, p. 1220, No. 546.
Turbo senticosus, Chemnitz, Conch. Cab., vol. iv. p. 308, pl. clv. figs. 1466, 1467.
Murex senticosus, Chemnitz, Conch. Cab., vol. xi. p. 132, pl. cxciii. figs. 1864-1866.
Buccinum senticosum, Bruguière, Encycl. méthod., vers, vol. i. p. 272, sp. 39, pl. ccccxix. fig. 3.
Murex senticosus, Dillwyn, vol. ii. p. 709, sp. 56.
" " Wood, Ind. Test., p. 129, pl. xxvi. fig. 58.
Cancellaria senticosa, Lamarck, Anim. s. vert., vol. vii. p. 111, and (ed. Desh.) vol. ix. p. 406, No. 7.
Buccinum senticosum, Kiener, Iconog., p. 26, sp. 27, pl. ix. fig. 31.
Phos senticosus, A. Adams, Proc. Zool. Soc. Lond., 1850, p. 153, sp. 1.
Murex senticosus, Hanley, Ipsa Linn. Conch., pp. 297, 523.
Phos senticosus, Sowerby, Thes. Conch., vol. iii. pt. 19, p. 89, sp. 1, pl. ccxxi. figs. 8–11.
" " E. A. Smith, Andaman Marine Shells, Proc. Zool. Soc. Lond., 1878, p. 811.
" " Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 176, No. 27.
" " E. A. Smith, "Alert" Collections, p. 50, No. 33.

September 18, 1874. Arrou Islands, west of Papua.

Habitat.—Philippines (British Museum), Andamans (Smith).

5. *Phos naucratoris*,[1] Watson (Pl. XIII. fig. 11).

Phos naucratoris, Watson, Prelim. Report, pt. 13, Journ. Linn. Soc. Lond., vol. xvi. p. 360.

Station 219. March 10, 1875. Lat. 1° 54′ S., long. 146° 39′ 40″ E. Admiralty Islands, north-east of Papua. 150 fathoms. Coral mud.

[1] ναυκράτωρ. master of the fleet, Admiralty.

Shell.—Strong, smooth, but not polished, yellowish white, with some pale ruddy bands, with a high conical spire, small sharp apex, and a slightly impressed suture. Whorls rounded, with narrow ribs and spiral threads, a short contracted base, and a twisted pillar. *Sculpture:* Longitudinals—on the last whorl there are about 15, on the earlier about 18, rather narrow, raised, rounded, flexuous ribs, of which one on each whorl is a little larger than the rest; they extend to the upper suture and also to the point of the base, they are parted by rounded furrows of twice their breadth; the lines of growth are extremely numerous and sharp. Spirals—the whole surface is densely packed with strongish, but very unequal, rounded threads parted by fine small furrows; there is a broad shallow furrow round the upper part of the pillar, and in it the spiral threads are sharper and sparser than elsewhere. *Colour* porcellanous white, stained with yellow on the surface, banded with palish rufous and white. *Spire* high, narrow, conical. *Apex* small, conical, and sharp, consisting of four bicarinated, conically shaped, whorls. *Whorls* 10, rounded, constricted below and contracted above; the last is a little tumid, with a short rounded base, which is produced into a short, broad, lop-sided scoop-like snout. *Suture* small, impressed, rather oblique. *Mouth* irregularly oval, pointed above, subangulated at the pillar, and produced in front into the short, open, oblique canal. *Outer lip* thickened by the external callus, in advance of which it is thin; within, it is scored with long narrow teeth; there is a slight open sinus near the body; its curve is a little angulated in front, from which point in particular it is patulous; the broad notch of the canal has a slightly reverted lip. *Inner lip* flat on the body, bluntly angulated at the base of the short pillar, which is swollen and twisted in front, and coarsely flanged on the edge; the extreme point of the pillar is very small and sharp, and is as prominent as the point of the outer lip; the labial pad is very thin and undefined. H. 1 in. B. 0·5. Penultimate whorl, height 0·2. Mouth, height 0·5, breadth 0·27.

The extreme tip of the apex in the only specimen present is broken. The species presents that feature which is peculiar to the whole genus, of strong family resemblance, but is quite distinct from all the species known to me.

6. *Phos bathyketes*,[1] Watson (Pl. XI. fig. 2).

Phos bathyketes, Watson, Prelim. Report, pt. 13, Journ. Linn. Soc. Lond., vol. xvi. p. 361.

Station 210. January 25, 1875. Lat. 9° 26′ N., long. 123° 45′ E. Philippines. 375 fathoms. Blue mud. Bottom temperature 54·1°.

Shell.—Thinnish, porcellanous, without lustre, brownish yellow, with a high conical spire, small turbinated apex, short rounded whorls having feeble ribs and spiral threads,

[1] *βαθυκήτης*, very deep.

deep suture, small body-whorl, short contracted base, and a broad, deeply nicked snout. *Sculpture:* Longitudinals—on the first regular whorl there are 11 or 12, on the body-whorl about twice as many, narrow, slightly prominent, rounded riblets, which extend from the suture to the point of the base; they have a sinistral trend, which is very marked on the base; they are parted by shallow furrows two or three times their breadth; the lines of growth are fine, sharp, and equal. Spirals—on the penultimate whorl there are about 6, on the body about 12, narrow rounded threads, which rise into sharpish little tubercles in crossing the riblets; the fourth of these lies about the periphery, and the furrow between it and the third is wider than the others; in all of these furrows are feebler threadlets. The front of the pillar has a strong twisted swelling. *Colour* dull brownish yellow, which is a little deeper on the tubercles. *Spire* high, narrow, conical. *Apex* slightly abrupt, consisting of $3\frac{1}{2}$ turbinated embryonic whorls, of which the extreme tip is very small; they are smooth and rounded, but slightly keeled above the suture; towards the first regular whorl the carinating thread becomes double or triple, and a few very oblique riblets appear. *Whorls* $9\frac{1}{2}$, short, rounded, being pretty equally constricted above and below; the last is small, being neither broad nor long: the base is short and conical, being drawn out into a broad, lop-sided, slightly reverted snout, in which lies the deep, wide, rounded nick of the anterior canal. *Suture* very deeply impressed, rather oblique. *Mouth* semi-oval, obliquely produced in front and abruptly truncated at the point; it is hardly angulated above. *Outer lip* has a feeble varix outside, formed by a crowding at that point of the longitudinal riblets; the edge is sharp, flatly arched, scored internally with long narrow teeth, which are alternately stronger and weaker; it is slightly emarginated below the suture, prominent in front, and then retreats to the edge of the canal, and here alone it is patulous. *Inner lip* short across the body, where the labial callus spreads somewhat; and there in the middle is a strongish little tooth; the junction of body and pillar is rather concave; the pillar, which is longish and somewhat swollen, is very obliquely cut off and twisted, with a narrow rounded edge; two strongish and one or two feeble teeth cross it almost horizontally; and it runs out in front to a very fine, attenuated, but blunted point. H. 0·9 in. B. 0·35. Penultimate whorl, height 0·16. Mouth, height 0·36, breadth 0·17.

This species is a good deal like *Phos borneensis*, Sow., from Borneo, but is slightly slimmer; the first whorls here are larger, the suture is deeper, and between the spirals the shell is smoother. In Sowerby's species, too, the upper angle of the mouth is much more deeply sinuated, and behind this canal is an angulated callus, the pillar is shorter and less sharply pointed, and there is no tooth on the body; the ribs in that species are stronger and closer set, and are frequently developed into varices, of which, with the exception of the feeble labral swelling, there are none in the Challenger species.

7. *Phos smithi*, n. sp. (Plate XVII. fig. 7).

Station 122. September 10, 1874. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Mud.

Shell.—Long, narrow, fusiform, closely and narrowly ribbed, spiralled, with a high narrow spire of flatly convex whorls, a small sharp apex, a shortish conical base, terminating in a short, lop-sided, straight snout. *Sculpture:* Longitudinals—there are on the last whorl 18 or 19 ribs, which diminish slowly in number up the spire; they stretch from suture to suture, are more or less continuous from whorl to whorl, and extend to the snout; they are narrow but well rounded, though on the last whorl they tend a little to spread out and flatten; the furrows between them are rather broader than they, especially on the body-whorl, for towards the apex they are crowded; on each whorl one or two of these ribs swell into a slightish varix: the entire surface is densely covered with fine hair-like lines of growth. Spirals—the whole shell is scored with rounded threads a good deal finer than the ribs; of these there are 2 on the first regular whorl, 7 to 8 on the penultimate, and about 16 on the body-whorl; in crossing the ribs these threads rise into broadish compressed white tubercles; the furrows between the threads are more than double the breadth of these, but generally have a finer thread in the bottom; two of the threads at the periphery, and the two on the snout, are stronger than the rest; the point of the snout is scored with the old canal scar, and is streaked obliquely with narrowish threads. *Colour* an ochrey white, stained with three bands of pale chestnut brown. *Spire* high, narrow, conical. *Apex* is sharply conical, and consists of 4 small white carinated angulated whorls (the extreme tip is broken, but was evidently minute), of which the last is feebly ribbed longitudinally. *Whorls* 8 below those of the apex; they are short and convex, and of very slow increase; the last is small and narrow, and has a short rounded base, ending in a smallish, lop-sided, slightly twisted, barely reverted, emarginate snout. *Suture* a little impressed, rather oblique. *Mouth* small, oval, pear-shaped, prolonged into a very short oblique canal. *Outer lip* thin, flatly convex in its curve, patulous in front, where it becomes concave in its curve, and then it runs oblique and direct down the short canal. *Inner lip* narrowly excavated into the texture of the shell; it is flat on the body, concave at the base of the pillar, which is short, straight and feebly double-toothed at its point, where it is obliquely cut off and twisted. H. 1·25 in. B. 0·45. Penultimate whorl, height 0·23. Mouth, height 0·52, breadth 0·25.

This species a good deal resembles *Phos cumingii*, Reeve, in form, but the sculpture is quite different. I have given it the name of Mr Edgar A. Smith, whose ever kind help I have repeatedly had to appeal to.

8. *Phos* (*Strongylocera*) *sculptilis*, A. Adams (Pl. XI. fig. 1).

Phos sculptilis, MacGillivray, Voyage "Rattlesnake," 1852, vol. ii. p. 365 (the mere name).
„ (*Strongylocera*) *sculptilis*, A. Adams, Genera, 1858, vol. i. p. 115 (the mere name).
„ „ „ British Museum, ticket No. 1372 (referring to MacGillivray's MS. list).

September 8, 1874. Cape York, off Albany Island, Torres Strait. 3 to 12 fathoms.

Habitat.—Cape York, Western Australia, 3 to 5 fathoms (British Museum).

I identified this specimen by comparison with the types in the British Museum. Why it is there marked with "?" I do not know, and the meagreness of my information exhibited in the references above forbids my attempting to conjecture. Why Adams (*loc. cit. supra*) should have classed it under Mörch's sub-genus *Strongylocera* I do not know; the whorls are not angulated, the upper part is not concave, the aperture is not contracted. Possibly this utter divergence from the diagnosis of Mörch's group may explain the "?" of the British Museum, but such eccentricities are no novelty in the hopeless confusion of subdivision.

Mr Edgar Smith, in answer to my inquiry regarding the species, says: "The name appears to be a MS. one. In the Voyage of the 'Rattlesnake,' Forbes enumerates a number of species collected by MacGillivray in the laminarian region, and among them he mentions . . . *Phos sculptilis*. Beyond this there is no mention of the species in the book." As the name has been published by Adams as his own, and the species exhibited under his name, it had best be so left.

9. *Phos* (*Strongylocera*) *angulatus*, Sowerby.

Phos angulatus, Sowerby, Thes. Conch., vol. iii. pt. 19, p. 89, sp. 3, pl. ccxxi. fig. 7.
„ *senticosus*, var., E. A. Smith, "Alert" Collections, p. 50, No. 33.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Off Malanipa, Basilan Strait, Philippines. 10 to 20 fathoms. Sand.

Habitat.—Philippines (Sowerby), Japan (Siebold).

This is a rather attenuated form. It is not a *Strongylocera*.

8. *Eburna*, Lamarck, 1801.

Eburna (*Zemira*) *australis*, Sowerby.

Eburna australis, Sowerby, Conch. Illust., fig. 5, sp. 8.[1]
Pseudoliva australis, Sowerby, Thes. Conch., vol. iii. pt. 19, p. 73, sp. 2, pl. ccxvi. figs. 7, 8.
Eburna australis, Reevé, Conch. Icon., vol. v. pl. i. fig. 4.
„ (*Zemira*) *australis*, Adams, Genera, vol. i. p. 110.
„ „ „ Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 189, No. 19.
„ *australis*, Löbbecke and Kobelt, Museum Löbbeckeanum in Jahrb. Malak. Gesellsch., 1880, p. 335, No. 10, pl. vii. figs. 5–8.
„ „ Kobelt, Conch. Cab. (ed. Küster), *Eburna*, p. 6, sp. 10, pl. lxxi. figs. 7–9.
„ (*Zemira*) *australis*, Tryon, Manual, vol. iii. p. 213, pl. lxxxii. fig. 474.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 fathoms. Sand and shells.

May 1874. Port Jackson, Sydney. 6 to 7 fathoms.

Habitat.—Port Jackson (Angas).

Family Olividæ, D'Orbigny.

Genera. 1. *Oliva*, Brug. 2. *Ancilla*, Lam.

1. *Oliva*, Bruguière, 1789.

Species.

1. *Oliva rufula*, Duclos.
2. *Oliva* (*Ispidula*) *australis*, Duclos.
3. *Oliva* (*Galeola*) *picta*, Reeve.
4. *Oliva* (*Olivella*) *fulgida*, Reeve.
5. *Oliva* (*Olivella*) *leucozona*, Ad. and Ang.
6. *Oliva* (*Olivella*) *nympha*, Ad. and Ang.
7. *Oliva* (*Olivella*) *pulchella*, Duclos.
8. *Oliva* (*Olivella*) *amblia*, Wats.
9. *Oliva* (*Olivella*) *ephamilla*, Wats.
10. *Oliva* (*Olivella*) *vitilia*, Wats.

1. *Oliva rufula*, Duclos.

Oliva rufula, Duclos, Monog. Oliv., sp. 107, pl. xix. figs. 9, 10.
„ „ Reeve, Conch. Icon., vol. vi. pl. xx. fig. 50.
Strephona rufula, Gray, Monog. Oliva, Proc. Zool. Soc. Lond., 1858, p. 46, sp. 36.
Oliva rufula, Marrat in Sowerby's Thes. Conch., vol. iv. pts. 29, 30, p. 18, sp. 86, pl. cccxli. (xiv. *Gen.*) figs. 197, 198.
„ „ Weinkauff in Conch. Cab. (ed. Küster), p. 87, pl. xxiii. figs. 8, 9.
„ „ Tryon, Manual, vol. v. p. 75, pl. xx. fig. 79.

October 6, 1874. Amboina. 15 to 25 fathoms.

Habitat.—Philippines (Reeve, and Berne Museum Coll., Shuttleworth), Moluccas (Duclos).

2. *Oliva* (*Ispidula*) *australis*, Duclos.

Oliva australis, Duclos, Monog. Oliv., sp. 54, pl. viii. figs. 3, 4.
„ „ Reeve, Conch. Icon., vol. vi. pl. xix. fig. 42.
Strephona australis, Gray, Monog. Oliva, Proc. Zool. Soc. Lond., 1858, p. 45, sp. 28.
Dactylus (*Ispidula*) *australis*, Adams, Genera, vol. i. p. 144.
Oliva australis, Angas, Proc. Zool. Soc. Lond., 1865, p. 164, No. 47.
„ „ Marrat in Sowerby's Thes. Conch., vol. iv. pts. 39, 40, p. 10, sp. 45, pl. cccxxxiii. (vi. *Gen.*) figs. 85–88.
„ „ Weinkauff in Conch. Cab. (ed. Küster), p. 82, pl. xxii. figs. 3, 4.
„ „ Tryon, Manual, vol. v. p. 85, pl. xxxii. figs. 19, 20

September 7, 1874. Torres Strait, north of Australia. 3 to 11 fathoms.
September 29, 1874. Cape York, off Albany Island, Torres Strait. 3 to 12 fathoms.

Habitat.—St Vincent Gulf, South Australia (Angas), Swan River (British Museum).

3. *Oliva (Galeola) picta*, Reeve.

Oliva picta, Reeve, Conch. Icon., vol. vi. pl. xxvi. fig. 79.
Galeola? picta, Gray, Monog. Oliva, Proc. Zool. Soc. Lond., 1858, p. 50, sp. 9.
Oliva picta, Marrat in Sowerby's Thes. Conch., vol. iv. pts. 29, 30, p. 20, sp. 98, pl. cccxlii. (xv. *Gen.*) figs. 227, 228.

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ W. Off Nukalofa, Tongatabu. 18 fathoms. Coral mud.
September 18, 1874. Arrou Islands. (No depth given.)
October 6, 1874. Amboina. 15 to 25 fathoms.

Habitat.—Philippines (Reeve), and Seychelles (British Museum).

I have abstained from quoting Weinkauff (in Küster's Conch. Cab., p. 33, pl. ii. figs. 10, 11, pl. iv. figs. 13, 14, pl. v. figs. 7, 8, 13, 14, *Oliva inflata*, Lam., with which he identifies the species of Reeve), because, variable as this species is, it seems to me incredible that the form figured in Küster can possibly be the *Oliva picta*, Reeve. For the same reason I omit Tryon, Manual, vol. v. p. 77, pl. xxi. figs. 97–99, pl. xxii. figs. 100–105, *Oliva funebralis*, Lam., and content myself with following the nomenclature of the British Museum, with the impression that both Weinkauff and Tryon must have mistaken Reeve's species. In the Encycl. méthod., vol. iii. p. 658, No. 29, *Oliva inflata*, Deshayes unites Lamarck's three species, *Oliva undata*, *Oliva inflata*, and *Oliva bicincta*, quoting for figures of these, as Lamarck (vol. vii. pp. 428, 429) had done before, the plates in the Encyclopédie (vol. iii. pl. cccLxiv. figs. 7, 5, and 1 respectively). It is impossible to read Deshayes' full and accurate remarks, or even Lamarck's short notice, and to glance at the exquisite engravings of the Encyclopédie, without recognising that they must represent something quite distinct from the species figured by Reeve (*loc. cit. supra*) and Sowerby (*loc. cit. supra*), which both represent very well indeed the British Museum types of *Oliva picta*, Reeve.

4. *Oliva (Olivella) fulgida*, Reeve.

Oliva fulgida, Reeve, Conch. Icon., vol. vi. pl. xxvi. fig. 78.
Olivina fulgida, Gray, Monog. Oliva, Proc. Zool. Soc. Lond., 1858, p. 54, sp. 22.
Olivella fulgida, Adams, Genera, vol. i. p. 145.
Oliva fulgida, Marrat in Sowerby's Thes. Conch., pts. 29, 30, p. 35, sp. 185, pl. cccl. (xxxiii. *Gen.*), figs. 413, 414.
„ (*Olivella*) *fulgida*, Weinkauff in Conch. Cab. (ed. Küster), p. 141, pl. xxxvi. figs. 14, 15.
Olivella nivea (Gmel.) var., Tryon, Manual, vol. v. p. 67, pl. xv. fig. 81.

Station 113A. September 1, 1873. Lat. 3° 47′ S., long. 32° 24′ 30″ W. Anchorage off Fernando-Noronha. 7 to 25 fathoms. Volcanic sand and gravel.

Habitat.—West Indies (British Museum).

5. *Oliva* (*Olivella*) *leucozona*, Adams and Angas.

Olivella leucozona, A. Adams and Angas, New Austral. Mar. Shells, Proc. Zool. Soc. Lond., 1863, p. 422, pl. xxxvii. fig. 23.
„ „ Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 192, No. 38.
Oliva leucozona, Marrat in Sowerby's Thes. Conch., pts. 29, 30, vol. iv. p. 37, sp. 196, pl. cccli. (xxv. *Gen.*) fig. 456.
„ (*Olivella*) *leucozona*, Weinkauff, Conch. Cab. (ed. Küster), p. 159, pl. xxxix. fig. 13; and in Jahrb. deutsch. Malak. Gesellsch., 1878, p. 128.
Olivella leucozona, Tryon, Manual, vol. v. p. 72, pl. xvii. fig. 45.

April 17, 18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Port Jackson, 6 fathoms (Adams and Angas), New Ireland (British Museum).

This is not the *Oliva leucozonias*, Gray, of Beechey's Voyage of the "Blossom" (p. 130, pl. xxxvi. fig. 10), and of Reeve's Monograph in Conch. Icon., vol. vi. pl. xxiv. fig. 67, from Senegal. The two names are inconveniently similar.

6. *Oliva* (*Olivella*) *nympha*, Adams and Angas.

Olivella nympha, Adams and Angas, Proc. Zool. Soc. Lond, 1863, p. 422.
„ „ Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 192, No. 39.
Oliva nympha, Marrat in Sowerby's Thes. Conch., pts. 29, 30, p. 37, sp. 194, pl. cccl. *bis* (xxiv. *Gen.*) fig. 426.
Oliva (*Olivella*) *nympha*, Weinkauff in Conch. Cab. (ed. Küster), p. 150, pl. xxxviii. fig. 10.
Olivella nympha, Tryon, Manual, vol. v. p. 72, pl. xvii. fig. 46.

April 17, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
May 1874. Port Jackson, Sydney. 6 to 7 fathoms.

Habitat.—Port Stephens and Port Jackson, South Australia, 5 fathoms (Angas).

7. *Oliva* (*Olivella*) *pulchella* (?), Duclos.

Oliva pulchella, Duclos, Monog. Oliv., pl. v. figs. 11, 12.
Anazola pulchella (Ducl.), Gray, Monog. Oliva, Proc. Zool. Soc. Lond., 1858, p. 51, sp. 6.
Olivina pulchella (Ducl.), Gray, Monog. Oliva, Proc. Zool. Soc. Lond., 1858, p. 53, sp. 6.

Oliva pulchella, Marrat in Sowerby's Thes. Conch., pts. 29, 30, p. 40, sp. 213 (xxv. *Gen.*) pl. cccli. fig. 446.
,, (*Olivella*) *pulchella*, Weinkauff in Conch. Cab. (ed. Küster), p. 137, pl. xxxv. figs. 11, 12.
Olivella pulchella, Tryon, Manual, vol. v. p. 71, pl. xvii. fig. 40.

Station 113A. September 1, 1873. Lat. 3° 47′ S., long. 32° 24′ 30″ W. Anchorage off Fernando-Noronha. 7 to 25 fathoms. Volcanic sand and gravel.

Habitat.—West Indies.

The Challenger obtained two fragments of an *Oliva*, which I believe to be this species, but I cannot assign them to it without some doubt.

Gray (*loc. cit.*, p. 53) says that this is the *Oliva pulchella*, Reeve, Conch. Icon., pl. xxx. fig. 98, the *Oliva oryza*, Lam., Reeve, Conch. Icon., pl. xxvii. fig. 81, the *Oliva menilifera*, Reeve, Conch. Icon., pl. xxvii. fig. 84, and the *Oliva pellucida*, Reeve, Conch. Icon., pl. xxvii. fig. 85. Weinkauff (*loc. cit.*), says it is the *Oliva leucozonias*, Gray, which Tryon denies.

I have quoted the authorities given above, but can hardly believe they have all had the same species before them.

8. *Oliva* (*Olivella*) *amblia*,[1] Watson (Pl. XIII. fig. 9).

Oliva (*Olivella*) *amblia*, Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 341.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Small, oval-oblong, glossy, white, with a short blunt spire, a conical base, and a small oval mouth. *Sculpture:* Longitudinals—lines of growth very faint. Spirals microscopic and obsolete. *Colour* porcellanous white, more or less transparent. *Spire* short, convexly conical. *Apex* bluntly rounded. *Whorls* 4½, conical, barely convex, with a minute sharp scalar projection below the suture. *Suture* minutely channelled. *Mouth* oval, pointed and channelled above, slightly narrowed below. *Outer lip* sharp and thin, patulous; below, it projects in a blunt point on the right side, between which and the pillar is the broad, open, shallow canal. *Inner lip:* there is a thick, narrow, irregular-edged pad; this in front coils round the pillar, which is bent, twisted, short, truncated, and toothless. H. 0·15 in. B. 0·11. Penultimate whorl, height 0·06. Mouth, height 0·1, breadth 0·07.

In general size and proportions this a good deal resembles *Oliva spreta*, Gould; but that is lower in the spire, the peripheral breadth lies higher, the shell is more attenuated in front, the mouth is longer, and the pillar is more defined by a pad crossed at the point by two teeth.

[1] ἀμβλύς, blunt.

9. *Oliva (Olivella) ephamilla*,[1] Watson (Pl. XIII. fig. 10).

Oliva (Olivella) ephamilla, Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 342.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Very small, oblong, glossy, white, with a high blunt spire, a conical base, and a long narrow mouth. *Sculpture:* Longitudinals—the lines of growth are barely recognisable. Spirals—there is scarcely a faint appearance of these. *Colour* probably porcellanous white in the living specimen. *Spire* high, convexly conical, minutely scalar from a very small projection below the suture. *Apex* bluntly rounded. *Whorls* 4½, with a minute projection below the suture, very slightly convex at the sides. *Suture* minutely perpendicularly[2] channelled. *Mouth* oblong, small, pointed, and deeply channelled above, slightly narrowed below. *Outer lip* sharp, prominent, regularly arched from the body to the point of the pillar, not being in the slightest degree emarginate in front. *Inner lip:* there is a thick, irregular-edged pad, which in front scarcely coils round the front of the bent, twisted, short, truncated, and toothless pillar. H. 0·16 in. B. 0·07. Penultimate whorl, height 0·04. Mouth, height 0·09, breadth 0·03.

The name of this little species is meant to signalise its remarkable resemblance to some of the minute Achatinas, such as *Cionella acicula*, Müll., or something between that and *Lovea leacociana*, Lowe. Thinking, from the figure, that it approached *Oliva tehuelchana*, d'Orb., I asked Mr E. A. Smith to compare it with the type of that species preserved in the British Museum. He replies: "I am sure that your shell is not *Oliva tehuelchana*, d'Orb. This has the whorls flat at the sides and separated by a sharply defined groove at the sutures; yours has the whorls a little convex in outline and differently canaliculate at the sutures." Than *Oliva myridiana*, Duclos, this Challenger shell is much larger, is different in colour and texture, and has a much coarser spire and apex.

10. *Oliva (Olivella) vitilia*, Watson (Pl. XIII. fig. 8).

Oliva (Olivella) vitilia, Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 342.

Station 24. March 25, 1874. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Small, oval, glossy, with a short, blunt, subscalar spire, and in front blunt and rather deeply sinuated. *Sculpture* scarcely any. *Colour* porcellanous. *Spire* very short, roundedly conical, subscalar from the cylindrical rise of the whorls out of the perpendicularly sunk sutural channel. *Apex* very blunt and rather large, impressed. *Whorls* 5, very short, except the last, which occupies nearly the whole shell, rounded

[1] ἐφάμιλλος, a match for another.

[2] *I.e.*, parallel to the axis, in which sense I would propose to use the word "axially."

above, cylindrical below in the channel of the *suture*, which is axially impressed. *Mouth* oblong, pointed and channelled above, slightly narrowed below. *Outer lip* thin, scarcely prominent or arched, running out to a blunt point in front to the right, whence it is obliquely truncated backwards to the point of the pillar with a deepish cut. *Inner lip:* there is on the body a very thick prominent and irregular pad of glaze, which curves round the straight point of the pillar and there is 4-plaited, and, with a sharply defined edge, encircles the point of the shell. H. 0·26 in. B. 0·13. Penultimate whorl, height 0·035. Mouth, height 0·19, breadth 0·07.

The low spire, very blunt apex, and four plaits on the pillar-pad distinguish this species from *Oliva rosalina*, Duclos, or *Oliva rufifasciata*, Reeve (which Dr Kobelt holds as = *Oliva mutica*, Say), or *Oliva inconspicua*, C. B. Ad. It is perhaps most like *Oliva pusilla*, C. B. Ad., which it resembles in lowness of spire and angularity at suture; but the spire is even lower than in that species, and the body-whorl is more tumid.

2. *Ancilla*, Lam., 1799.

The name *Ancilla* was published by Lamarck in 1799 in his Prodrome d'une Nouvelle Classification des Coquilles, Mémoire de la Société d'histoire Naturelle de Paris; also, in 1801, Système des Anim. s. vert., p. 73; also in the Annales du Musée of the same year, vol. i. p. 474; and, finally, in 1809, in his Philosophie Zoologique, vol. i. p. 322. In 1805, Félix de Roissy, in his continuation of Montfort's Hist. Nat. des Moll. (Suites à Buffon), vol. v. p. 430, proposed *Anaulax* as a substitute for *Ancilla*, on the ground that its French form (Ancille) was too like the French form (Ancyle) of *Ancylus*. In 1811, Lamarck, under the influence of the same objection, proposed (Ann. du Musée, vol. xvi. p. 305) for *Ancilla* to substitute *Ancillaria*, a change which has been largely accepted, and is warmly defended by Deshayes (Anim. s. vert. de Paris, vol. iii. p. 531), who asserts the principle that an author's right of priority entitles him to alter a name at his pleasure. Such a principle is of course untenable, as the right of priority lies not in the author but in the name, which can only be changed for sufficient reasons. That the reasons in this case are sufficient cannot be maintained, based as they are exclusively on the conversational convenience of French malacologists, who can at once obviate the confusion between Ancille and Ancyle by adopting for the latter the almost universal European pronunciation of Ankylus or Ankyle in French. But even if the French objection to *Ancilla* be pressed, it must be remembered that our alternative for it is not Lamarck's later name of *Ancillaria*, but Roissy's *Anaulax*, which has been largely employed as a subgeneric title.

Species.

1. *Ancilla* (*Anaulax*) *obtusa* (Swains).
2. *Ancilla* (*Anaulax*) *muceronata* (Sow).
3. *Ancilla* (*Anaulax*) *montrouzieri* (Souv).
4. *Ancilla* (*Anaulax*) *pyramidalis* (Reeve).
5. *Ancilla* (*Anaulax*) *nana*, n. sp.
6. *Ancilla* (*Amalda*) *oblonga* (Sow).
7. *Ancilla* (*Dipsaccus*) *cingulata* (Sow).

1. *Ancilla* (*Anaulax*) *obtusa* (Swainson).

Ancillaria obtusa, Swainson, Monog. of *Ancillaria*, Journ. Sci. Lit. and Art., vol. xviii. p. 282.
" " Sowerby, Thes. Conch., vol. iii. p. 62, sp. 26, pl. ccxi. (i. *Gen.*), figs. 15, 16.
" " Adams and Reeve, Samarang. Zool., Moll., p. 31, pl. xiii. fig. 6.
" " Reeve, Conch. Icon., vol. xv. pl. iii. fig. 6.
" (*Anaulax*) *obtusa*, Adams, Genera, vol. i. p. 149.
" *obtusa*, v. Martens, Südafrik. Moll., Jahrb. deutsch. malak. Gesellsch., 1874, p. 140 (but only quoting from Adams and Reeve, Samarang, *loc. cit. supra*).
" " Weinkauff in Conch. Cab. (ed. Küster), p. 18, sp. 17, pl. v. figs. 7, 8, pl. vii. fig. 2.
" " Weinkauff, Jahrb. deutsch. malak. Gesellsch., 1880, p. 105, sp. 25.
" *australis*, var. (?) Tryon, Manual, vol. v. p. 94, pl. xxxviii. figs. 32, 33.

December 1873. Simons Bay, Cape of Good Hope. 15 to 20 fathoms.

Habitat.—East Africa below Natal (Adams and Reeve), Cape of Good Hope (British Museum).

2. *Ancilla* (*Anaulax*) *mucronata* (Sowerby).

Ancillaria mucronata, Sowerby, Sp. Conch., pt. 1, p. 8, figs. 47, 48.
" " Sowerby, Thes. Conch., vol. iii. pt. 19, p. 63, sp. 30, pl. ccxi. (i. *Gen.*) figs. 11, 12, 14.
" " Kiener, Iconog., p. 7, sp. 4, pl. iii. fig. 3.
" " Reeve, Conch. Icon., vol. xv. pl. iv. fig. 10.
" (*Anaulax*) *mucronata*, Adams, Genera, vol. i. p. 149.
" *mucronata*, Weinkauff in Conch. Cab. (ed. Küster), p. 20, pl. vi. figs. 3, 4.
" " Weinkauff, Jahrb. deutsch. malak. Gesellsch., 1880, p. 105, No. 27.
" *australis*, var. (?) Tryon, Manual, vol. v. p. 94, pl. xxxviii. fig. 31.

Station 167A. June 27, 1874. Lat. 41° 4′ S., long. 174° 19′ E. Queen Charlotte's Sound, near Long Island, New Zealand. 10 fathoms. Mud.

Habitat.—New Zealand (Kiener), Tasmania (British Museum), Australia (Sowerby).

In this species the pad on the spire is generally much heavier than it is on *Ancilla australis*, though this is not a constant characteristic, but the spiral striolations are stronger and more fretted than they are in that species. Weinkauff, in the Conchologische Cabinet (*loc. cit. supra*), says of *Ancillaria mucronata* that it is "von *A. montrouzieri* in der Schale wenig verschieden;" but that is hardly the case, for the shell in the former is shorter, the callus in front is wrinkled, and the colour is dirty.

3. *Ancilla* (*Anaulax*) *montrouzieri* (Souverbie).

Ancillaria montrouzieri, Souverbie, Journ. de conch., 1860, pp. 207 and 324, pl. xi. fig. 3.
" " Reeve, Conch. Icon., vol. xv. pl. iv. fig. 9.
" " Weinkauff, Conch. Cab. (ed. Küster), pp. 17, 19, pl. v. figs. 5, 6, pl. vii. fig. 3.
" " Weinkauff, Jahrb. deutsch. malak. Gesellsch., 1880, p. 105, sp. 28.
" " Tryon, Manual, vol. v. p. 94, pl. xxxviii. fig. 34.

Station 141. December 17, 1873. Lat. 34° 41′ S., long. 18° 36′ E. 20° S.S.E. of Cape of Good Hope. 98 fathoms. Green sand.

Habitat.—New Caledonia (Souverbie).

This species I identified from specimens in the British Museum, and in the Delessert collection of the Geneva Museum. The locality assigned by Souverbie, and in both these museums, is New Caledonia. The improbability of the species existing there *and at the Cape* is so very great, that I have four times at considerable intervals re-examined the specimen, and secured the help of Mr Edgar Smith for the same purpose. The shell is in form a little more elongated, and the anterior sinus is a little wider than in the type. But there really is no doubt whatever that the Challenger specimen belongs to this species. Can any confusion of locality have occurred? I am not aware of any, nor even of any likelihood of error. If, however, as Mr Marrat (Proc. Geol. Soc. Liver., 1879, p. 12) asserts, this species is identical with the *Ancillaria buccinoïdes*, Lam., a Grignon fossil, the extent of its distribution at the present day need not surprise us.

4. *Ancilla* (*Anaulax*) *pyramidalis*, (Reeve).

Ancillaria pyramidalis, Reeve, Conch. Icon., vol. xv. pl. 4, fig. 11.
„ „ Hutton, Manual, p. 59.

Station 167. June 24, 1874. Lat. 39° 32′ S., long. 171° 48′ E. New Zealand. 150 fathoms. Blue mud.

Habitat.—New Zealand (Reeve).

Von Martens (Critical List of the Moll. of New Zealand, p. 23) considers this as scarcely different from *Ancilla australis*, but Weinkauff (Conch. Cab., ed. Küster, p. 16) and Tryon (Man., vol. v. p. 94, pl. xxxviii. fig. 29) boldly unite the two; the species, however, has as good right to exist as a good many others, and its suppression would need for its justification a good deal more study of the whole genus than has yet seemingly been given.

5. *Ancilla* (*Anaulax*) *nana*,[1] n. sp. (Pl. XVII. fig. 10).

Station 167A. June 27, 1874. Lat. 41° 4′ S., long. 174° 19′ E. Queen Charlotte Sound, Long Island, New Zealand. 10 fathoms. Mud.

Shell.—Narrowly ovate, brown, with whitish and darker bands, a high spire small pointed, a concealed suture, a small mouth, and a strong labial pad. *Sculpture:* Longitudinals—there are very faint lines of growth. Spirals—the pillar and front of the shell is twisted, scored, and white, with a sharply scored upper edge; above this is a brown band, defined above by a sharp small furrow, above which, at a little distance, is another similar

[1] So called from its small size.

but sharper furrow which runs out into a little prickle on the outer lip; the upper part of the body-whorl is buried in enamel, banded with alternate white, brown, and pale, the succession of which colours up the spire makes it possible to count the whorls. *Colour* fawn, banded with white and brown. *Spire* high and small. *Apex* small, bluntly rounded, and white; it is free from enamel. *Whorls* 6; the last is elongated, and a very little tumid. *Suture* buried. *Mouth* narrowly oval, pointed above, truncated, and emarginate in front. *Outer lip* flatly curved, thin, with a projecting point on the edge in front. *Inner lip* slightly convex on the body, concave below; a thick labial pad loads the twisted pillar, fills the mouth above, spreads out on the body, and covers the spire. *Operculum*, triangularly lanceolate, sharp-pointed above, with a terminal nucleus lying toward the outer edge, feebly lineated, thin, yellow, with a dull gloss; it quite fills the mouth of the shell. H. 0·37 in. B. 0·17. Mouth, height 0·22, breadth 0·07.

This species is narrower than any of the small Ancillas, and has at the same time all the appearance of being full grown.

6. *Ancilla* (*Amalda*) *oblonga* (Sowerby).

Ancillaria oblonga, Sowerby, Sp. Conch., pt. 1, p. 7, figs. 38, 39.
" " Sowerby, Thes. Conch., vol. iii. pt. 19, p. 65, sp. 38, pl. ccxiii. (iii. *Gen.*) figs. 42, 43.
" " Lamarck, Anim. s. vert. (ed. Desh.), vol. x. p. 595, sp. 10.
" " Kiener, Iconog., p. 15, sp. 10, pl. iv. fig. 2.
" " Reeve, Conch. Icon., vol. xv. pl. viii. fig. 24.
Amalda oblonga, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 193, No. 41.
Ancillaria oblonga, Weinkauff in Conch. Cab. (ed. Küster), p. 28, sp. 29, pl. ix. figs. 2, 5.
" " Weinkauff, Jahrb. deutsch. malak. Gesellsch., 1880, p. 105, sp. 36.

April 17–18, 1874. Port Jackson, Sydney, Australia. 2 to 10 fathoms.

Station 163B. June 3, 1874. Lat. 35° 51′ 15″ S., long. 151° 22′ 15″ E. Port Jackson, Sydney. 30 to 35 fathoms. Hard ground.

Habitat.—Port Jackson (Angas).

7. *Ancilla* (*Dipsaccus*) *cingulata* (Sowerby).

Ancillaria cingulata, Sowerby, Sp. Conch., pt. 1, p. 6, figs. 36, 37.
Dipsaccus cingulatus, Adams, Genera, vol. i. p. 147.
Ancillaria cingulata, Sowerby, Thes. Conch., vol. iii. pt. 19, p. 62, sp. 25, pl. ccxiii. (iii. *Gen.*) fig. 54.
" " Reeve, Conch. Icon., vol. xv. pl. ii. fig. 4.
" " Kiener, Iconog., p. 10, sp. 6, pl. iv. figs. 1 and 1a.
" " Weinkauff in Conch. Cab. (ed. Küster), p. 11, sp. 11, pl. iv. figs. 1, 2.
" " Weinkauff, Jahrb. deutsch. malak. Gesellsch., 1880, p. 106, sp. 43.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, off south-west point of Papua. 28 fathoms. Green mud.

Habitat.—Chinese Seas (Sowerby and Kiener), Cape York and Torres Strait. (British Museum).

A rather elongated form presents itself in this specimen. Adams (*loc. cit. supra*) gives *Dipsaccus* of Klein the position of a genus. In his Diagnosis he says of it that it is "generally deeply umbilicated;" but in the Remarks which he subjoins he says that in this genus "there are four species, distinguished by the deep umbilicus and channelled columella." A glance at any figure of *Ancilla cingulata*, Sow., will show that it is not umbilicated at all.

Family HARPINÆ, Adams, 1858.

Genus *Harpa*, Rumphius, 1799.

Harpa nobilis, Lamarck.

Martini, Conch. Cab., vol. iii. p. 415, pl. cxix. fig. 1091.
Harpa nobilis, Lamarck, Anim. s. vert., vol. vii. p. 256, and (ed. Desh.) vol. x. p. 132, sp. 4.
" " Deshayes, Encycl. méthod., vers. vol. ii. p. 186 (2), sp. 2 (not pl. cccciv. fig. 2).
" " Kiener, Iconog., p. 9, sp. 3, pl. iii. fig. 5, pl. vi. fig. 11.
" " Reeve, Conch. Icon., vol. i. pl. i. fig. 1.
" " Küster, Conch. Cab. (ed. Küster), p. 94, sp. 8, pl. lxix. figs. 1–4.
" " Sowerby, Thes. Conch., vol. iii., pt. 20, p. 170, sp. 3, pl. ccxxxi. (i. *Gen.*) figs. 1–3.
" " Sutor, Monog. in Jahrb. deutsch. malak. Gesellsch., 1877, p. 114, sp. 9.
" " Tryon, Manual, vol. v. p. 99, pl. xli. fig. 68.

March 7, 1875. Admiralty Islands, north-east of Papua. 16 to 25 fathoms.

Habitat.—Pacific Islands (British Museum).

Family COLUMBELLINÆ, Adams, 1858.

Genus *Columbella*, Lamarck, 1799.

Species.

1. *Columbella mercatoria* (Linne).
2. *Columbella rustica* (Linne).
3. *Columbella versicolor*, Sow.
4. *Columbella* (*Mitrella*) *albina*, Kien.
5. *Columbella* (*Mitrella*) *albomaculata*, Ang.
6. *Columbella* (*Mitrella*) *australis*, Gask.
7. *Columbella* (*Atilia*) *filosa*, Ang.
8. *Columbella* (*Atilia*) *puella*, Sow.
9. *Columbella* (*Anachis*) *haliæeti*, Jeffr.
10. *Columbella* (*Pyrene*) *strix*, Wats.
11. *Columbella* (*Pyrene*) *stricta*, Wats.
12. *Columbella* (*Conidea*) *flava* (Brug.)
13. *Columbella* (*Pusiostoma*) *mendicaria* (Linne).
14. *Columbella* (*Zafra*) *greci*, Phil.
15. *Columbella* (*Zafra*) *troglodytes*, Souverbie.

1. *Columbella mercatoria* (Linne).

Le Staron, Adanson, Sénégal, p. 137, pl. ix. fig. 29.
Voluta mercatoria, Linne, Syst. Nat., p. 1190, No. 409.
Martini, Conch. Cab., vol. ii. p. 130, pl. xliv. figs. 452–458.
„ „ Dillwyn, Catalogue, vol. i. p. 532, sp. 74.
„ „ Wood, Ind. Test. (ed. Hanley), p. 102, pl. xx. fig. 73 (*Columbella*).
Columbella mercatoria, Lamarck, Anim. s. vert., vol. vii. p. 294, and (ed. Desh.) vol. x. p. 268, sp. 3.
„ „ Bruguière, Encycl. méthod., vers, vol. ii. p. 252, sp. 3, pl. cccIxxv. fig. 4.
„ „ Sowerby, Thes. Conch., vol. i. pt. 4, p. 115, sp. 14, pl. xxxvi. figs. 28–32.
„ „ Kiener, Iconographie, p. 23, sp. 19, pl. v. fig. 1.
„ „ Duclos, Monog., pl. vi. figs. 9–14.
„ „ Reeve, Conch. Icon., vol. xi. pl. x. fig. 47.
„ „ Fischer, Catalogue Coq. Guadaloupe (Beau) in Revue Coloniale, 1857, p. 10, sp. 1.
Voluta mercatoria, Hanley, Ipsa Linn. Conch., pp. 221, 506.
Columbella mercatoria, Tristram, Bermudan Moll., Proc. Zool. Soc. Lond., 1861, p. 404.
„ „ Tryon, Manual, vol. v. p. 106, pl. xliii. figs. 28–33.

Station 113A. September 1, 1873. Lat. 3° 47′ S., long. 32° 24′ 30″ W. Anchorage off Fernando-Noronha. 7 to 25 fathoms. Volcanic sand and gravel.

October to December 1873. Sea Point, near Cape Town.

Habitat.—Gorea, off Senegal (Adanson), West Indies (Hanley), Bermuda (Tristram), Guadaloupe (Fischer).

2. *Columbella rustica* (Linne).

Le Siger, Adanson, Sénégal, p. 135, pl. ix. fig. 28.
Voluta rustica, Linne, Syst. Nat., p. 1190, No. 410.
Martini, Conch. Cab., vol. ii. p. 137, pl. xliv. figs. 462, 468–471.
„ „ Dillwyn, Catalogue, vol. i. p. 533, sp. 75.
„ „ Wood, Ind. Test. (ed. Hanley), p. 102, pl. xx. fig. 74 (*Columbella*).
„ „ Lamarck, Anim. s. vert., vol. vii. p. 293, and (ed. Desh.) vol. x. p. 267, sp. 2.
„ „ Della Chiaje, Poli, vol. iii. (2) p. 32, pl. xlvi. figs. 39, 40.
Columbella rustica, Bruguière, Encycl. méthod., vers. vol. ii. p. 251, sp. 2, pl. cccIxxv. fig. 2 (*Columbella reticulata*).
„ „ Philippi, Enum. Moll. Sicil., vol. i. p. 228, pl. xii. fig. 11, and vol. ii. p. 194, sp. 1.
„ „ Kiener, Iconographie, p. 7, sp. 5, pl. i. fig. 3, and pl. ii. figs. 1, 2.
„ „ Sowerby, Thes. Conch., vol. i. pt. 4, p. 14, pl. xxxvi. figs. 19, 22, 24.
„ „ Reeve, Conch. Icon., vol. xi. pl. xxxiii. fig. 211.
Voluta rustica, Hanley, Ipsa Linn. Conch., pp. 221, 506.
Columbella rustica, Weinkauff, Conch. des Mittelmeeres, vol. ii. p. 34, sp. 1.
„ „ Monterosato, Enumerazione, p. 43.
„ „ Seguenza, Form. Terz. Calabr., pp. 318, 353.
„ „ Tryon, Manual, vol. v. p. 107, pl. xliii. figs. 34–49, pl. xliv. figs. 50–56.

February 10, 1873. Tenerife, Canaries. 70 fathoms.

July 28–31, 1873. St Vincent, Cape de Verdes. 7 to 25 fathoms.

Habitat.—Mediterranean and Africa (Linne), Antilles (Lam.)

Fossil.—From the Upper Pliocene onwards (Seguenza).

3. *Columbella versicolor*, Sowerby.

? Martini, Conch. Cab., vol. ii. p. 133, pl. xliv. fig. 462.
Columbella scripta [but not of Linne (*Murex*)], Lamarck, Anim. s. vert., vol. vii. p. 295, and (ed. Desh.) vol. x. p. 270, sp. 10.
,, ,, Bruguière, Encycl. méthod., vers, vol. ii. p. 253, sp. 6.
,, ,, Kiener, p. 50, No. 45, pl. vi. fig. 3.
,, *versicolor*, Sowerby, Proc. Zool. Soc. Lond., 1832, p. 119.
,, ,, Sowerby, Thes. Conch., vol. i. pt. 4, p. 117, sp. 18, pl. xxxvii. figs. 41–46.
,, ,, Reeve, Conch. Icon., vol. xi. pl. xi. fig. 51.
,, ,, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 194, No. 48.
,, *scripta*, Lischke, Jap. Meer. Conch., vol. i. p. 57, vol. ii. p. 46.
,, *versicolor*, v. Martens, Moll. Mauritius, &c., p. 247.
,, *scripta*, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, p. 226, No. 12.
,, *versicolor*, Tryon, Manual, vol. v. p. 110, pl. xlv. figs. 84–96.
,, *scripta*, Dunker, Index Moll. Mar. Japon., p. 54.

May 14, 1875. Oosima, Japan.

Habitat.—Indian Ocean (v. Martens), Port Jackson, New South Wales (Angas), Torres Straits (Brazier), New Caledonia, Philippines, Japan (Lischke).

As the name *Scripta* is pre-occupied by Linne for a Mediterranean species of *Columbella*, there seems no choice but to adopt Sowerby's name for this species. I have followed Menke (Synopsis, p. 65), and Pfeiffer (Register, p. 13), and v. Martens in quoting Martini, but have queried it, for that author says his species is *Le siger* of Adanson from Gorea, which is *Columbella rustica*, Linne. Dunker (*loc. cit. supra*) says that *Columbella bidentata*, Menke (Spec. Moll. Nov. Hollandiæ, p. 23, No. 108), is a variety of this species.

4. *Columbella* (*Mitrella*) *albina*, Kiener.

Columbella albina, Kiener, Iconog., p. 32, sp. 28, pl. xiii. fig. 4.
,, ,, Sowerby, Thes. Conch., vol. i. pt. 4, p. 123, sp. 34, pl. xxxviii. figs. 81, 82.
,, ,, Lamarck, Anim. s. vert. (ed. Desh.), vol. x. p. 289, sp. 42.
,, ,, Reeve, Conch. Icon., vol. xi. pl. xviii. fig. 97.
,, (*Mitrella*) *albina*, Tryon, Manual, vol. v. p. 121, pl. xlviii. figs. 70, 71.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Mindoro in the Philippines (Lamarck), Fiji (British Museum).

Is the *Columbella ligula*, Duclos, really distinct from this species?

5. *Columbella* (*Mitrella*) *albomaculata*, Angas.

Columbella (*Mitrella*) *albomaculata*, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, pp. 111, 195, pl. xiii. fig. 5.
,, ,, *tayloriana*, Tryon, Manual, vol. v. p. 141, pl. li. fig. 62.

April 17–18, 1874. Port Jackson, Sydney, Australia.

Habitat.—Port Jackson, under stones (Angas).

Mr Tryon considers Angas' species = *Columbella tayloriana*, Reeve. His types in the British Museum seemed to me to be = *Columbella lincolnensis*, Reeve; but I should have united that and several others to *Columbella acuminata*, Menke, which is older.

6. *Columbella* (*Mitrella*) *australis*, Gaskoin.

Columbella australis, Gaskoin, Proc. Zool. Soc. Lond., 1851, p. 5, No. 7.
„ „ Reeve, Conch. Icon., vol. xi. pl. xv. fig. 78.
Columbella (*Mitrella*) *australis*, Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 166, No. 60.
„ „ „ Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 194, No. 50.
„ „ „ Tryon, Manual, vol. v. p. 126, pl. xlix. figs. 97, 98.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
April 23, 1874. Port Jackson, Sydney. 6 to 15 fathoms.

Habitat.—Sydney (Gaskoin), and Yorke's Peninsula, South Australia (Angas).

7. *Columbella* (*Atilia*) *filosa*, Angas.

Æsopus filosus, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 111, pl. xiii. fig. 6, and p. 195, No. 56.
Columbella (*Atilia*) *filosa*, Tryon, Manual, vol. v. p. 151, pl. liii. fig. 17.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Port Jackson, Sydney (Angas).

8. *Columbella* (*Atilia*) *puella*, Sowerby.

Columbella puella, Sowerby MS., British Museum.
„ „ Reeve, Conch. Icon., vol. xi. pl. xiii. fig. 65.
„ „ Deshayes, Moll. Réunion, p. 131.
„ (*Atilia*) *puella*, E. A. Smith, Mar. Shells, Andaman Islands, Proc. Zool. Soc. Lond., 1878, p. 807, No. 12.
„ *puella*, v. Martens, Moll. Mauritius, &c., p. 248.
„ (*Atilia*) *conspersa*, Tryon, Manual, vol. v. p. 145, pl. lii. fig. 79.

April 17, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Philippine Islands (Reeve), Mauritius, Ceylon, Nicobars, Malayan Archipelago (v. Martens), Réunion (Deshayes), Andamans (E. A. Smith).

This is a young specimen of the species, and had been overlooked by me. Mr E. A. Smith kindly identified it for me. Both Deshayes and v. Martens quote the species as from the Thesaurus of Sowerby, but it is not given there, and their references do not tally with one another, so that there is evidently some confusion.

9. *Columbella* (*Anachis*) *haliæeti*, Jeffreys.

Columbella corrugata, Hörnæs, Foss. Moll. Wien-Beckens, vol. i. p. 120, pl. xi. fig. 8 (as *Buccinum corrugatum*, Brocchi, but not his species, which is a *Nassa*).

„ *haliæeti*, Dr Gwyn Jeffreys, Shetland Dredgings Report, Ann. and Mag. Nat. Hist., ser. 4, vol. ii., 1868, pp. 9, 16.

„ „ Dr Gwyn Jeffreys, Brit. Assoc. Report, 1868, pp. 237–244 (separate impression).

„ „ Dr Gwyn Jeffreys, Brit. Conch., vol. iv. p. 356, pl. vi. fig. 5, vol. v. p. 219, pl. lxxxviii. fig. 3.

„ „ Dr Gwyn Jeffreys, "Triton" Dredgings, Proc. Zool. Soc. Lond., 1883, p. 392, sp. 19, from Station 10.

Pyrene costulata, G. O. Sars, Moll. Arct. Norv., p. 252, No. 170, pl. xxiii. fig. 16.

Anachis costulata, Verrill, Cat. Mar. Moll., Trans. Connecticut Acad., vol. v. pt. 2, p. 513, pl. xliii. fig. 7.

Columbella (*Anachis*) *costulata*, Tryon, Manual, vol. v. p. 160, pl. lvi. figs. 77, 79.

Station II. January 13, 1873. Lat. 38° 10′ N., long. 9° 14′ W. Setubal. 470 fathoms. Green mud.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Habitat.—North Atlantic at great depths; Wellington Channel, Greenland, 35 to 80 fathoms (Jeffreys), North-west of Norway, 400 fathoms (Sars), New England coast (Verrill).

Fossil.—From the lower beds of the Upper Miocene in the Vienna basin (Hörnæs).

Dr Gwyn Jeffreys (Proc. Zool. Soc. Lond., *loc cit. supra*) says that the type-specimen of *Columbella costulata*, Cantr., with which this species was for a time identified, has been lost, and that from Cantraine's description it is not possible with any certainty to say what his species is. (See Cantraine, Nouv. Espèces de Moll., Bull. Acad. Sciences Bruxelles, 1835, pt. 2, p. 393.)[1] It was held, however, to be the same as *Buccinum acuticostatum*, Phil.[2]

Of that species I have obtained specimens through the kindness of Professor Seguenza. Assuming it to be well identified, I have no doubt that the *Buccinum acuticostatum*, Phil., is not *Columbella haliæeti*, Jeffr. I have therefore omitted reference to Monterosato (Enumeraz., p. 44), and to Seguenza (Form. terz. Calab., pp. 259, 353), as the species they had before them was obviously that of Philippi. As to Sars' Norwegian species, there can be no doubt that his description and figure belong to *Columbella haliæeti*. Tryon (*loc. cit.*) refers his unrecognisable figure 77 to Gwyn Jeffreys, and his figure 79 to Sars, so there can be no doubt what was the species

[1] *Fusus costulatus.*—Testâ ovatâ, ventricosâ, subfusiformi, transversim subtillissime striata, longitudinaliter costatâ, costis confertis flexuosis, aperturâ elongatâ edentatâ, caudâ brevi subascendente. Altitudo 4 lin. Des terrains tertiaires de Pélore.

[2] Whether this identification is correct I have not the means of determining; but Cantraine described his species as "aperturâ edentatâ," and Philippi's description and figure (Enum., vol. ii. p. 192, sp. 8, pl. xxvii. fig. 14) seem to point in the same direction; but the Calabrian pliocene fossil which has been considered as Philippi's species has the outer lip toothed, and the strong spirals on the whorls do not tally with Philippi's "obsolete transversim sulcata," and "striis transversis obsoletis circa 8."

he was pointing at. I have accordingly quoted both of his figures here for Dr Gwyn Jeffreys' species. As to Hörnæs, I have quoted him on the authority of Dr Gwyn Jeffreys (Brit. Conch., *loc. cit. supra*); but his species (which he erroneously identified as *Buccinum corrugatum*, Broc.) is, on both the outer and inner lip, "mit starken Zähnen versehen," which is not the case with Dr Jeffreys' species. If, however, Hörnæs' species be really that of Dr Jeffreys, then probably Michelotti's name of *harpula* will have priority. It is obvious that there is here a whole group of Columbellas greatly in need of revision.

10. *Columbella* (*Pyrene*) *strix*,[1] Watson (Pl. XIII. fig. 2b).

Columbella (*Pyrene*) *strix*, Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 339.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Var. *Subacta*. (Pl. XIII. fig. 2d.)

Station 23. March 15, 1873. Lat. 18° 24′ N., long. 63° 28′ W. Sombrero Island, West Indies. 450 fathoms. Pteropod ooze.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Rather small, short, and dumpy, with a high blunt spire, a small last whorl, a very contracted base, from which projects a small, slightly reverted snout; the whorls are longitudinally chamfered, and have a small beaded thread round the top. *Sculpture:* Longitudinals—there are on each whorl about 13 straight, narrow, ridge-like, but low riblets, separated by shallow furrows of two to three times their breadth; these ribs and furrows run pretty continuously down the spire, with a slight sinistral twist; toward the mouth and on the base they become feeble, but are faintly traceable on the snout. The whole surface is finely scored with lines of growth. Spirals—the suture is inferiorly margined by a slight thread, which rises into small beads in crossing the riblets; in the longitudinal furrows a faint tendency to spiral scratches is visible, which on the base arrange themselves into narrow and very superficial furrows with broadish flat threads between; these become strongish and narrower on the base of the snout, but feebler again towards its front. *Colour:* glossy porcellanous white. *Spire* rather high, narrow and conical. *Apex* a small round dome of two glossy embryonic whorls, of which the extreme tip is both immersed and flattened down with scarcely any suture. *Whorls* 8 in all, conical, with straight sides, short and broad; at the top each projects very shortly and horizontally; the last is small, with a rapidly contracted base, from which projects the small slightly reverted snout. *Suture* a very little impressed, but strongly marked by the projection of the whorl below it. *Mouth* small, rather rhomboidal, pointed above, and produced below into a short open squarish canal. *Outer lip* very straight to the corner of the base, from which it is patulous and curved; in the middle one small round tubercle

[1] *Strix*, a chamfer.

projects; a little way below the suture the edge is drawn back, so as to form a very slight open false sinus. *Inner lip:* there is a thin glaze on the body where the line is very straight, as it is also down the pillar, where the glaze (without teeth) forms a thickish prominent border; this border is early cut off on the sharp oblique twisted edge of the pillar in front; the pillar is short and straight, with a slightly bent-over point. H. 0·4 in. B. 0·15. Penultimate whorl, height 0·08. Mouth, height 0·13, breadth 0·07.

The variety *subacta* has less developed and less regular ribs, is a little longer and smaller, and has a very slightly larger apex.

This species is closely connected with the group represented on our coasts by *Columbella haliæeti*, Jeffr., and of which Binney, in his edition of Gould's Moll. of Massachusetts, gives several species. It is, however, very markedly different from all of these.

11. *Columbella (Pyrene) stricta*, Watson (Pl. XIII. fig. 3).

Columbella (Pyrene) stricta, Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 340.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Small, short, and dumpy, with a rather high, scalar, blunt spire, a short but broadish last whorl, a very contracted base, and a small slightly reverted snout; the whorls are longitudinally chamfered, have a small keel round the top, and rather broad spiral threads. *Sculpture:* Longitudinals—there are on the last whorl about 12 low, ridge-shaped, straight ribs, which are not continuous from whorl to whorl, but increase rapidly in number up the spire; they are parted by furrows about three times their width; the last one, which is remote from the edge of the lip, is varicose; they become obsolete towards the point of the base. Spirals—below the suture are two well-marked furrows interrupted by the ribs and parted by a strongish thread, which forms a keel, and rises on the ribs into little tubercles: below this the whorls are more or less obsoletely scored by broad flat threads; these on the base and pillar are very distinct, though narrow, and are parted by broad, shallow, square-cut furrows. *Colour:* smooth, porcellanous white. *Spire* rather high, scalar, conical. *Apex* a blunt, round, smooth, glossy dome of $1\frac{1}{2}$ embryonic whorls, whose tip is both immersed and flattened down, with a scarcely perceptible suture. *Whorls* 6, cylindrical, scarcely convex, angulated and flatly shouldered at the top; the last is short, slightly tumid, with a rapidly contracted base, from which projects the short, broad, conical, abruptly truncated snout. *Suture* angular and well marked by the projection of the shoulder below it. *Mouth* small, short, but broadish, angulated above, obliquely prolonged below into the square, open, slightly reverted canal. *Outer lip* contracted and very slightly curved above, very patulous where the bend comes, and below this direct and oblique; it has about 10 small teeth within, of which the highest is remote from the top, and is larger than the others; just at this point is a slight open

false sinus. *Inner lip:* there is a thin glaze on the body, the line across which is very straight, as is also the line down the pillar where the glaze forms a projecting border (without teeth), which runs out sharp and narrow to the very point; the point of the pillar is very obliquely cut off with a twist; the pillar itself is short, strong, and conical. H. 0·25 in. B. 0·13. Penultimate whorl, height 0·05. Mouth, height 0·11, breadth 0·06.

This belongs to the same group as *Columbella* (*Pyrene*) *strix*.

12. *Columbella* (*Conidea*) *flava* (Bruguière).

? Martini, Conch. Cab., vol. ii. p. 135, pl. xliv. fig. 467.
Buccinum flavum, Bruguière, Encycl. méthod., vol. i. p. 281, sp. 53.
Columbella flavida, Lamarck, Anim. s. vert., vol. vii. p. 294, and (ed. Desh.) vol. x. p. 268, sp. 4.
„ „ Sowerby, Thes. Conch., vol. i. pt. 4, p. 118, sp. 22, pl. xxxvii. figs. 55–57.
„ „ Kiener, Iconographie, p. 34, sp. 30, pl. viii. fig. 3.
„ *flava*, Reeve, Conch. Icon., vol. xi. pl. vi. p. 27.
„ *flavida*, Deshayes, Moll. Réunion, p. 131.
„ „ Lischke, Jap. Meer. Conch., vol. i. p. 58, vol. ii. p. 47, and (*Columbella undata*) vol. iii. p. 34, pl. ii. figs. 1–4.
„ *flavida*, v. Martens, Moll. Mauritius, &c., p. 247.
„ (*Conidea*) *flava*, Tryon, Manual, vol. v. p. 182, pl. lix. figs. 67–72.
„ (*Pyrene*) *flava*, Dunker, Ind. Moll. Mar. Japon., p. 55.

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ W. Off Nukalofa, Tongatabu. 18 fathoms. Coral mud.

Habitat.—Indian Ocean, Ceylon, and Polynesia (v. Martens), Japan (Lischke).

I have put a mark of interrogation to the citation of "Martini, Conch. Cab.," because he positively ascribes the species there mentioned to Gorea, Jamaica, and the Antilles; but Professor v. Martens (*loc. cit.*) quotes Martini for this species.

13. *Columbella* (*Pusiostoma*) *mendicaria* (Linne).

Voluta mendicaria, Linne, Syst. Nat., p. 1191, No. 412.
Martini, Conch. Cab., vol. ii. p. 132, pl. xliv. figs. 460, 461.
„ „ Dillwyn, Cat., vol. i. p. 536, sp. 82.
„ „ Wood, Ind. Test., p. 102, pl. xx. fig. 79.
Columbella mendicaria, Lamarck, Anim. s. vert., vol. vii. p. 296, and (ed. Desh.) vol. x. p. 272, sp. 14.
„ „ Bruguière, Encycl. méthod., vol. ii. p. 254, sp. 9, pl. cccl xxv. fig. 10.
„ „ Quoy and Gaimard, "Astrolabe" Zool., vol. ii. p. 584, pl. xl. figs. 27, 28.
„ „ Kiener, Iconographie, p. 48, sp. 43, pl. vi. fig. 1.
Ricinula mendicaria, Reeve, Conch. Icon., vol. iii. pl. ii. fig. 8.
Columbella mendicaria, Gray, Moll. Figures, vol. ii. pl. xcviii. fig. 7.
„ „ Mörch, Journ. de conch., vol. vii. (1858), p. 260, pl. ix. fig. 7 (*radula*).

Voluta mendicaria, Hanley, Ipsa Linn. Conch., pp. 222, 506.
Columbella (Pusiostoma) mendicaria, Chenu, Manuel, vol. i. p. 203, fig. 1106.
„ *mendicaria*, Deshayes, Moll. Réunion, p. 131, No. 436.
Pusiostoma mendicaria, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 233.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Asia (Linne), Indian Ocean (Lamarck), Mauritius (Hanley in Wood), and New Ireland; Torres Strait (Brazier).

Tryon (Manual, vol. v. p. 106, pl. xliii. figs. 28–33) has fallen into some mistake in the identification of this species, which he ascribes to the West Indies and Florida, and which none of his figures represent. I have quoted Mörch in order to enable any one who wishes to consult so high an authority on the classification of this species. V. Martens omits it in his Mollusca of the Mauritius, &c.

14. *Columbella (Zafra) greci*, Philippi.

Mitra obsoleta, Philippi, Enum. Moll. Sic., vol. i. p. 230, sp. 5 (but not of Bronn).
Columbella greci, Philippi, Enum. Moll. Sic., vol. ii. p. 194, sp. foss. 2, pl. xxvii. fig. 18.
Mitra columbellaria, Philippi, Enum. Moll. Sic., vol. ii. p. 195, sp. 4, pl. xxvii. fig. 17 (but not of Scacchi).
„ *clandestina*, Reeve, Conch. Icon., vol. ii. pl. xxxii. fig. 263.
Columbella greci, Monterosato, Enumeraz., p. 43.
Mitra columbellaria, Tryon, Manual, vol. iv. p. 195, pl. lvii. fig. 653.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 fathoms. Volcanic mud.

Habitat.—Mediterranean.

Fossil.—Post-pliocene beds of Sicily (Philippi).

Philippi's determination of this species in vol. i. p. 230, was, he says (*loc. cit. supra*), a mistake; that at vol. ii. p. 195, is, according to Monterosato, also erroneous; while that of vol. ii. p. 194, where he treats it as a new species, is correct.

15. *Columbella (Zafra) troglodytes*, Souverbie.

Columbella troglodytes, Souverbie, Journ. de conch., 1866, vol. xiv. p. 145, pl. vi. fig. 4.
„ (*Seminella*) *troglodytes*, Tryon, Manual, vol. v. p. 165, pl. lvi. fig. 89.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York, Torres Strait. 8 fathoms. Coral mud.

July, 1875. Reef off Honolulu, Sandwich Islands. 40 fathoms.

Habitat.—Art Island, New Caledonia (Souverbie), Papua (Tryon).

Family FASCIOLARIIDÆ, Gray, 1857.

Genus *Fasciolaria*, Lam., 1799.

Species.

1. *Fasciolaria coronata*, Lam.
2. *Fasciolaria trapezium* (Linne).
3. *Fasciolaria rutila*, Wats.
4. *Fasciolaria armata*, A. Ad.
5. *Fasciolaria* (*Latirus*) *contempta*, A. Ad.
6. *Fasciolaria* (*Latirus*) *strangei*, A. Ad.

1. *Fasciolaria coronata*, Lamarck.

Fasciolaria coronata, Lamarck, Anim. s. vert., vol. vii. p. 120, and (ed. Desh.) vol. ix. p. 435, sp. 6.
„ „ Kiener, Iconog., p. 9, sp. 6, pl. ix. fig. 1.
„ „ Deshayes, Encycl. méthod. vers, vol. (2) ii. p. 126, sp. 6.
„ „ Reeve, Conch. Icon., vol. ix. pl. vi. fig. 14.
„ „ Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 164, No. 49.
„ „ Kobelt, Conch. Cab. (ed. Küster), p. 150, sp. 17, pl. xxvii. figs. 1, 2.
„ „ Sowerby, Thes. Conch., pt. 37, p. 10, sp. 3, pl. ccccxxiv. *bis* (i. *Gen.*), fig. 3.
„ „ Tryon, Manual, vol. iii. p. 77, pl. lxiii. figs. 34.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait, South Australia. 38 fathoms. Sand and shells.

Habitat.—South Australia (Angas), Australia, Van Diemen's Land, and the Philippines (British Museum).

This specimen is rather low in the spire—strong—and with the angle of the outer lip very decided, recalling indeed *Fasciolaria trapezium*, Linne, but is obviously Lamarck's species.

2. *Fasciolaria trapezium* (Linne).

Murex trapezium, Linne, Syst. Nat. (12th ed.), p. 1224, No. 567.
Vestis persica, Martini, Conch. Cab., vol. iv. p. 134, pl. cxxxix. figs. 1298, 1299.
Murex trapezium, Dillwyn, Catalogue, vol. ii. p. 735, sp. 109.
„ „ Wood, Ind. Test., p. 134, pl. xxvii. fig. 112.
Fasciolaria trapezium, Lamarck, Anim. s. vert., vol. vii. p. 119, and (ed. Desh.) vol. ix. p. 433, sp. 3.
„ „ Deshayes, Encycl. méthod. vers, vol. ii. (2) p. 125, No. 2, pl. ccccxxxi. fig. 3.
„ „ Kiener, Iconog., p. 8, sp. 3, pl. vi. fig. 1.
„ „ Sowerby, Conch. Man., fig. 386.
„ „ Quoy and Gaimard, "Astrolabe," Zool., vol. ii. p. 511.
„ *persica*, Eydoux and Souleyet, Bonite, No. 220, pl. xliv. figs. 11, 12.
„ *trapezium*, Reeve, Conch. Icon., vol. iv. pl. vii. fig. 16 (on the plate by mistake 15).
Murex trapezium, Hanley, Ipsa Linn. Conch., pp. 306, 525.
Fasciolaria trapezium, Deshayes, Conch. Réunion, p. 112, No. 342.
„ „ Issel, Malac. Marrosso, p. 139, No. 308.
„ *audouini*, Lischke, Jap. Meer. Conch., vol. i. p. 40, vol. ii. p. 28.

Fasciolaria trapezium, Kobelt, Conch. Cab. (ed. Küster), p. 131, pl. x. figs. 1, 2, pl. xii. figs. 1, 2.
" " Sowerby, Thes. Conch., pt. 37, p. 11, pl. ccccxxvi. (iii. *Gen.*), figs. 21–23.
" " v. Martens, Moll. Mauritius, &c., p. 245.
" " Tryon, Manual, vol. iii. p. 77, pl. lxi. figs. 24–26, pl. lxii. 27, 28.

Station 208. January 17, 1875. Lat. 11° 37′ N., long. 123° 31′ E. Philippines. 18 fathoms. Blue mud.

Habitat.—Red Sea (Issel), East Coast of Africa, Indian Ocean, Ceylon, Nicobars, Malay Archipelago (v. Martens).

3. *Fasciolaria rutila*, Watson (Pl. XIII. fig. 6).

Fasciolaria rutila, Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 335.

Station 142. December 18, 1873. Lat. 35° 4′ S., long. 18° 37′ E. Off the Cape of Good Hope. 150 fathoms. Green sand. Bottom temperature 47° F.

Shell.—Long, narrow, fusiform, not ribbed, finely spiralled, with a high narrow spire of rounded whorls, a blunt mamillary apex, a contracted rounded base, prolonged into a long, lop-sided, slightly reversed snout. *Sculpture:* Longitudinals—there are none but small, rude lines of growth. Spirals—there are very many small, rounded, pretty equal threads parted by shallow rounded furrows of about their own breadth; on the snout these threads are feebler, sharper, and more remote. *Colour* white under a thin, brown, smooth, persistent epidermis; the inside of the mouth is tinged with buff, which is deeper on the inner lip than elsewhere. *Spire* very high, narrow, conical, but a little bent. *Apex* consists of 1 to 2 large, mamillary, but cylindrical whorls. *Whorls* 8 in all, high, narrow, of rapid increase, convex, rounded, contracted below as well as above, where they slightly lap up on the preceding whorl; the last whorl is larger than all the rest, is slightly tumid, rounded on the base, which is contracted, especially on the left, and is produced into a very long, narrow, lop-sided, bent, and slightly reversed snout. *Suture* deep, but very open. *Mouth* oval, direct, pointed above, prolonged into a long, oblique, narrow, open, twisted canal, which is a good deal reverted in front. *Outer lip* narrow, blunt, very finely crenulated on the edge; it is very regularly arched, and not at all patulous till it approaches the canal, where it is increasingly patulous to the point; in this part of its course its curve is concave. *Inner lip*—there is a diffuse white callus above; its whole curve is concave to the edge of the canal, where it is obliquely truncate, sharp, and twisted; its edge in front is extremely narrow and sharp; there are two slight, oblique, white teeth close to the pillar-edge. *Operculum* oval, with a pointed, almost claw-like apex; it is thinnish, horny, sharp-edged, strongly marked with lines of growth on its outer face, and having on its inner face a broad, flat, glossy swelling along its outer margin. H. 4 in. B. 1·44. Penultimate whorl, height 0·7. Mouth, height 2·2, breadth 0·78.

This is an exceptional form, having the apex of a *Fusus* (a feature shared by *Fasciolaria coronata*, Lam.), and having a long, thin, bent canal and no longitudinal ribs or tubercles,—features which, though present in some species (as, for instance, *Fasciolaria tulipa*, Linne, and *Fasciolaria papillosa*, Sow.), are uncommon, especially united. It is also peculiar from the slimness of its form and the thinness of its shell. It is not a *Turbinella*, for its pillar-teeth are only two, are slight and very oblique; the operculum, too, is small and thin. No volute has so high a spire, so small a mouth, so long and narrow a canal, nor an operculum of the form which this presents (see Journ. de conch. 1877, p. 97).

4. *Fasciolaria armata* (A. Adams) (Pl. XIII. fig. 1).

Latirus armatus, A. Adams, Proc. Zool. Soc. Lond., 1854, p. 314, No. 11.
Turbinella carinifera (not of Lamarck), Reeve, Conch. Icon., vol. iv. pl. iii. fig. 14.
Latirus armatus, Kobelt, Conch. Cab. (ed. Küster), p. 120, sp. 5 (no fig.)
Fasciolaria maderensis, Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 336.

Station VIIp. February 10, 1873. Lat. 28° 35′ N., long. 16° 5′ W. Off Tenerife. 78 fathoms. Volcanic sand.

Habitat.—California (A. Adams).

Shell.—Biconical, fusiform; as the shell lies on its mouth, the periphery in the centre of the back is exactly in the middle of the shell's length; solid, angulated, rough and opaque; ribbed and spirally ridged, with an umbilical chink. Mouth angularly pear-shaped, with a long, narrow, slightly oblique canal; toothed on the pillar and within the outer lip. Epidermis strong and horny. Operculum dark brown and claw-shaped. *Sculpture:* Longitudinals—there are 8 to 10 broad, low, rounded, irregular ribs; they diminish in number up the spire; they scarcely appear above the suture or on the base; the lines of growth are numerous, unequal, sharpish, but rather coarse. Spirals—there are spiral ridges which, in crossing the ribs, rise into narrow blunt prickles vaulted but scarcely open in front; of these ridges there is one on the upper whorls, three on the body-whorl, each accompanied below by its shadow, which is sometimes double; the highest and strongest ridge is remote from the suture, and forms a marked shoulder; on the snout are two strongish threads, and towards its point four or five much smaller ones. The whole surface is covered with feeble microscopic striæ. *Colour* a rich buff below a darker epidermis, which is strong, horny, and persistent. *Spire* high, scalar, conical. *Apex* small and prominent. *Whorls* 9 to 10, angular, with a long, sloping, slightly concave shoulder defined by the prominent and sharp keel, below which the whorls contract a little to the inferior suture; the body-whorl is short, and contracts into a long, conical, straight, narrow snout. *Suture* slight, irregular, impressed, oblique. *Mouth* bluish white, with a narrow, dirty yellowish edge; small, deep, oval, angulated above and at the keel, with a long, narrow, deep, slightly oblique canal in front; exclusive of the canal, the mouth is nearly one-third of the whole length of the shell. *Outer lip*—

sharp and wrinkled on the edge, patulous, with many small, close-set, deep-stretching, ridge-like teeth within; it is straight above, angulated at the keel, convex in the middle, concave as it approaches the canal, along which it is straight. *Inner lip*—a thick patulous glaze with a sharp and prominent edge, behind which is a long narrow umbilical chink; close to the upper angle of the mouth is a long feeble tooth, and in the front of the mouth and deep within are three very slight pillar-folds; the beginning of the canal is defined by a sharp little tubercle, answering to which is the lowest of the outer-lip teeth. *Operculum* thick, horny, dark brown, claw-like, with curved lines of growth; on its inner face are many concentric fine lines, with a broad, thick, rounded, polished, exterior border. H. 1·7 in. B. 0·95. Penultimate whorl, height 0·3. Mouth, height 1, breadth 0·5.

This species of Adams seems to have fallen into utter oblivion, to which the strangeness of the habitat he ascribed to it has doubtless contributed. The type specimen, however, is preserved in the British Museum; and on Mr Edgar Smith's calling my attention to it, I found it impossible to doubt that the two species were identical, and that the locality of Adams is a mistake. I have therefore suppressed the name I had given to the Challenger shell and to the numerous specimens of it I had dredged in Madeira.[1] The species is not at all uncommon in museums under the name of *Fasciolaria* (or *Turbinella*) *carinifera*, Lam., and is the species figured by Reeve as that of Lamarck, which is from the Pacific, and, though similar, is certainly different. In spite of the absence from the Geneva Museum of Lamarck's own specimens, of which (*teste* his own entry on the margin of his copy of the "Animaux s. vert," 1st ed., vol. vii. p. 108, sp. 16, preserved at Geneva) he had three, and in spite of his omitting to mention the strong *basal* carina of *Turbinella carinifera*, I am persuaded that Lamarck had before him the Pacific species. That species differs from *Fasciolaria armata* in being ruddy inside and outside; it lacks the two little teeth on outer and inner lip at the origin of the canal; the junction of snout and base is much more strangulated; there is a much stronger basal carina; the mouth is more open, the outer lip being much more patulous; the snout is not so regularly attenuated; the longitudinal ribs are more numerous and rise broadly and roundly, instead of being flattened out horizontally and on the crest pointed; the shoulder below the suture is less drooping, and the outer lip joins the body at the third, not at the second carinal spiral, thus leaving two, not merely one, spiral threads on the earlier whorls.

Fasciolaria lignaria, Linne, a Mediterranean species, is a much narrower form, of stouter build, broader in the snout, and quite differently ribbed and spiralled. *Turbinella recurvirostra*, Wagner, is obviously different. I am not quite sure whether *Chascax maderensis*, Wats., is not a very aberrant variety. The enormous umbilicus of that species is certainly very striking; and the total absence of teeth, not only on the outer lip, but even on the pillar, is a further notable feature of difference—a feature so notable that I think my friend Dr Kobelt, had the shell itself been before him, would hardly have suppressed *Chascax* as a mere *Fasciolaria*. Still, withal, while protesting against hasty judgment, I feel it is possible that *Chascax maderensis* and the present form may ultimately

[1] I raise no question here about the specific value of *Turbinella armata*, Broderip (Proc. Zool. Soc. Lond., 1833, p. 7), believing that the generic difference between *Fasciolaria* and *Turbinella* makes good Adams' species as above, and gives it priority to the name I had chosen.

prove to be one species. It had been suggested that this *Chascax maderensis* might be *Turbinella stokesii*, Gray, a species utterly unknown but for the type shell preserved in the British Museum. Mr Edgar Smith has kindly examined Gray's species for me, and assures me it is the *Turbinella triserialis*, Lam.

5. *Fasciolaria* (*Latirus*) *contempta*, A. Adams.

Latirus contemptus, A. Adams, Proc. Zool. Soc. Lond., 1854, p. 315, No. 19.
Turbinella contempta, Kobelt, Conch. Cab. (ed. Küster), p. 114, sp. 120, pl. xxvii. figs. 7, 8.
Latirus contemptus, Tryon, Manual, vol. iii. p. 92, pl. lix. fig. 152.

October 6, 1874. Amboina. 15 to 25 fathoms.

Habitat.—West Indies (A. Adams).

Misled by the locality, I had failed to identify this species, but Mr E. A. Smith, whom I afterwards consulted, writes—"There is not a shadow of doubt of the identity of your shell with the specimen" (of *Latirus contemptus*, A. Adams) "in the Cumingian collection, and I therefore conclude that the habitat 'West Indies' is another instance of error in this respect in the Cumingian collection." At the same time I ought, perhaps, to add that Dr Kobelt (*loc. cit.*) quotes it from "St Croix, Westindien," implying apparently definite acquaintance with the habitat of his specimen, which is found in the collection of Mr Sutor of Hamburg. I have taken a good deal of trouble, but have not succeeded in getting any further information regarding that specimen.

6. *Fasciolaria* (*Latirus*) *strangei*, A. Adams (Pl. XIV. fig. 4).

Latirus strangei, A. Adams, Proc. Zool. Soc. Lond., 1854, p. 316, No. 21.
" " Kobelt, Conch. Cab. (ed. Küster.), p. 119 (no fig.)
" " Angas, Addit. Port Jackson Moll., Proc. Zool. Soc. Lond., 1877, p. 181, No. 34.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Sydney (Adams).

Family MITRIDÆ, Adams, 1858.

Genus *Mitra*, Humphrey, 1797.

Species.

1. *Mitra* (*Nebularia*) *glabra*, Swains.
2. *Mitra* (*Nebularia*) *rhodia*, Reeve.
3. *Mitra* (*Scabricola*) *crenifera*, Lam.
4. *Mitra* (*Scabricola*) *sphærulata*, Martyn.
5. *Mitra* (*Cancilla*) *cyri*, Dohrn.
6. *Mitra* (*Cancilla*) *filaris*, Linne.
7. *Mitra* (*Cancilla*) *interlirata*, Reeve.
8. *Mitra* (*Cancilla*) *reticulata*, A. Ad.
9. *Mitra* (*Cancilla*) *rufescens*, A. Ad.
10. *Mitra* (*Cancilla*) *verrucosa*, Reeve.
11. *Mitra* (*Costellaria*) *amanda*, Reeve.
12. *Mitra* (*Costellaria*) *exasperata*, Chem.
13. *Mitra* (*Costellaria*) *fusiformis*, Kien.
14. *Mitra* (*Costellaria*) *nodilirata*, A. Ad.
15. *Mitra* (*Costellaria*) *radius*, Reeve.
16. *Mitra* (*Costellaria*) *sculptilis*, Reeve.
17. *Mitra* (*Pusia*) *cineracea*, Reeve.
18. *Mitra* (*Pusia*) *nodulifera*, A. Ad.
19. *Mitra* (*Callithea*) *obeliscus*, Reeve.
20. *Mitra* (*Callithea*) *sanguisuga*, Lam.

1. *Mitra* (*Nebularia*) *glabra* (?) Swainson.

Mitra glabra, Swainson, Exot. Conch., vol. i. pl. 24.
„ *cancellata*, Swainson, Zool. Illustr., vol. i. pl. xxix. fig. 3.
Voluta pyramis, Wood, Ind. Test. p. 210, sp. 16, Supp. pl. iii. fig. 16.
Mitra buccinata, Quoy and Gaimard, "Astrolabe," Zool., pl. xlv. *bis*, figs. 14, 15.
„ *glabra*, Lamarck, Anim. s. vert. (ed. Desh.), vol. x. p. 348, sp. 90.
„ *buccinata*, Kiener, Iconog., p. 32, sp. 31, pl. xi. fig. 31.
„ „ Küster, Conch. Cab. (ed. Küster), p. 136, sp. 124, pl. xviid. fig. 13.
„ *glabra*, Reeve, Conch. Icon., vol. ii. pl. vi. fig. 43.
„ (*Nebularia*) *buccinata*, Adams, Genera, vol. i. p. 169.
„ *glabra*, Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 165, No. 56.
„ „ Sowerby, Thes. Conch., pts. 31, 32, p. 7, No. 81, pl. ccclv. (iv. *Gen.*) fig. 54.
„ „ Tryon, Manual, vol. iv. p. 117, pl. xxxiv. fig. 42.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 fathoms. Sand and shells.

Habitat.—South and West Australia.

The Challenger specimen is a small shell, and I refer it to *Mitra glabra* with considerable hesitation. The locality suits, and it is liker to that species than to any I know, but the specimens in the British Museum are in very bad condition, and I failed to find any young shells, which are always peculiarly instructive, though lamentably despised even in the best museums.

2. *Mitra* (*Nebularia*) *rhodia*, Reeve.

Mitra rhodia, Reeve, Proc. Zool. Soc. Lond., 1845, p. 46.
„ „ Reeve, Conch. Icon., vol. ii. pl. xxviii. fig. 225.
„ (*Nebularia*) *rhodia*, Adams, Genera, vol. i. p. 170.
„ „ „ Sowerby, Thes. Conch., pts. 31, 32, vol. iv. p. 6, No. 73, pl. ccclxiv. (xiii. *Gen.*) fig. 213, and pl. ccclxvii. (xvi. *Gen.*) fig. 302.
„ „ „ Tryon, Manual, vol. iv. p. 127, pl. xxxvii. fig. 114.

April 17–18, 1874. Port Jackson, Sydney. 2 to 12 fathoms.

Habitat.—Sydney, under stones (British Museum).

3. *Mitra* (*Scabricola*) *crenifera*, Lamarck.

Mitra crenifera, Lamarck, Ann. du Musée., vol. xvii. p. 204, sp. 20.
Voluta clathrus and *Voluta crenifera*, Dillwyn Catalogue, vol. i. pp. 541, 542, sp. 97, 98.
„ „ „ „ Wood, Ind. Test., p. 103, pl. xx. figs. 94, 95.
Mitra crenifera, Lamarck, Anim. s. vert., vol. vii. p. 306, and (ed. Desh.) vol. x. p. 311, sp. 20.
„ „ Deshayes, Encycl. méthod. vers, vol. ii. (2), p. 459, sp. 31, pl. ccclxx. fig. 3.
„ „ Kiener, Iconog., p. 18, sp. 15, pl. iv. fig. 11.
„ „ Küster, Conch. Cab. (ed. Küster), p. 126, sp. 112, pl. xviic. fig. 10.
„ „ Reeve, Conch. Icon., vol. ii. pl. vi. fig. 38.
„ „ Sowerby, Thes. Conch., vol. iv. pts. 31, 32, p. 8, sp. 95, pl. cccliv. (iii. *Gen.*) figs. 29–31.

Mitra (*Scabricola*) *crenifera*, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 208.
„ (*Scabricula*) *crenifera*, v. Martens, Moll. Maurit., &c., p. 251.
„ (*Scabricola*) *crenifera*, Tryon, Manual, vol. iv. p. 135, pl. xxxix. figs. 152, 164, 165.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Mauritius, Nicobars, Ceylon, Malay Peninsula (v. Martens), Manilla (Reeve), Torres Straits (Brazier).

4. *Mitra* (*Scabricola*) *sphærulata*, Martyn.

Mitra sphærulata, Martyn, Univ. Conch., vol. i. fig. 21, and (ed. Chenu) pl. vi. fig. 4.
Voluta scabricula, Wood, Ind. Test., p. 103, pl. xx. fig. 96.
Mitra scabriuscula (not of Linne), Lamarck, Anim. s. vert., vol. vii. p. 305, and (ed. Desh.) vol. x. p. 310, sp. 18 (in part).
„ „ Schubert and Wagner, Conch. Cab. (1st ed.), vol. xii. p. 80, pl. ccxxv. figs. 3090, 3091.
„ „ Deshayes, Encycl. méthod. vers, vol. ii. (2) p. 459; sp. 33, pl. ccclxxi. fig. 5.
„ *sphærulata*, Reeve, Conch. Icon., vol. ii. pl. v. fig. 37.
„ *scabriuscula*, Kiener, Iconog., p. 14, sp. 12, pl. iv. fig. 9.
„ *sphærulata*, Sowerby, Thes. Conch., vol. iv. pts. 31, 32, p. 8, sp. 94, pl. cccliv. (iii. *Gen.*) fig. 38.
„ (*Scabricola*) *sphærulata*, Tryon, Manual, vol. iv. p. 134, pl. xxxix. fig. 149.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Ticao, Philippines, and Tahiti (Reeve).

5. *Mitra* (*Cancilla*) *cyri*, Dohrn.

Mitra cyri, Dohrn, Proc. Zool. Soc. Lond., 1860, p. 367.
„ „ Sowerby, Thes. Conch., vol. iv. pts. 31, 32, p. 10, sp. 133, pl. ccclxxvii. (xxvi. *Gen.*) fig. 576.
„ (*Cancilla*) *fulgetrum* var., Tryon, Manual, vol. iv. p. 142, pl. xli. fig. 198.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—New Caledonia (Dohrn) and Red Sea (Sowerby).

I give Sowerby's reference here as found in his Thesaurus, without which I fear no one would recognise his figure. Tryon seems simply to have copied it. If it was on the strength of this figure he felt himself emboldened to unite *Mitra cyri*, Dohrn, to *Mitra boissaci*, Montrouz., and so to *Mitra fulgetrum*, Sow., the only wonder which remains is why he stopped there. Montrouzier's figure of *Mitra boissaci* (Journ. de conch., vol. viii. p. 118, pl. ii. fig. 6) is perhaps as remote from the description as it could well be. Tryon has amended its colours, but, under the guidance of Sowerby, rather deteriorated its form.

6. *Mitra* (*Cancilla*) *filaris* (Linne).

Voluta filaris, Linne, Mantissa, p. 548.
„ *filosa*, Born, Test. Mus. Vindobon., p. 225, pl. ix. figs. 9, 10.

Mitra nexilis, Martyn, Univ. Conch., vol. i. fig. 22, and (ed. Chenu) pl. vi. fig. 5.
Voluta filaris and *Voluta filosa*, Dillwyn, Cat., vol. i. p. 540, sp. 93, 94.
„ „ and „ „ Wood, Ind. Test., p. 103, pl. xx. figs. 90, 91.
Mitra nexilis, Lamarck, Anim. s. vert., vol. vii. p. 305, and (ed. Desh.) vol. x. p. 309, sp. 16.
„ *filosa*, Lamarck, Anim. s. vert., vol. vii. p. 311, and (ed. Desh.) vol. x. p. 321, sp. 33.
„ „ Deshayes, Encycl. méthod. vers, vol. ii. (2) p. 453, sp. 16.
„ „ Kiener, Iconog., p. 20, sp. 17, pl. v. fig. 12.
„ *filaris*, Schubert and Wagner, Conch. Cab., vol. xii. p. 81, pl. ccxxv. figs. 3092, 3093.
„ „ Reeve, Conch. Icon., vol. ii. pl. xi. fig. 81.
„ „ Hanley, Ipsa Linn. Conch., pp., 455, 554.
„ *filosa*, Küster, Conch. Cab. (ed. Küster), p. 47, sp. 15, pl. ix. figs. 3, 4, pl. xiii. figs. 11, 12.
„ *nexilis*, Küster, Conch. Cab. (ed. Küster), p. 64, sp. 36, pl. xii. fig. 7.
„ *filaris*, Sowerby, Thes. Conch., vol. iv. pts. 31, 32, p. 8, sp. 110, pl. ccclviii. (vii. *Gen.*) figs. 82, 83.
„ (*Cancilla*) *filaris*, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 208, No. 35.
„ „ „ v. Martens, Moll. Mauritius, &c., p. 251.
„ „ „ Tryon, Manual, vol. iv. p. 138, pl. xl. figs. 174–176, 180.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Philippines and Moluccas (Berne Mus., Coll. Shuttleworth), Tahiti (Reeve), Torres Strait (Brazier), Mauritius, Bourbon, Indian Ocean, Polynesia (v. Martens).

7. *Mitra* (*Cancilla*) *interlirata*, Reeve.

Mitra interlirata, Reeve, Proc. Zool. Soc. Lond., 1844, p. 173.
„ „ Reeve, Conch. Icon., vol. ii. pl. x. fig. 70.
„ „ Sowerby, Thes. Conch., vol. iv. pts. 31, 32, p. 9, sp. 112, pl. ccclix. (xix. *Gen.*) fig. 369.
Cancilla interlirata, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 209.
Mitra (*Cancilla*) *interlirata*, v. Martens, Moll. Mauritius, &c., p. 251.
„ „ *flammea* var., Tryon, Manual, vol. iv. p. 140, pl. xli. fig. 192.

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ W. Off Nukalofa, Tongatabu (within the reef). 18 fathoms. Coral mud.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Raine Island, Cape York, Torres Strait. 155 fathoms. Coral sand.

(?) September 18, 1874. Arrou Island, west of Papua.

Habitat.—Masbate, Philippines (Reeve), North-east Australia and Torres Strait, 5 to 30 fathoms (Brazier); Mauritius, Ceylon, Nicobars, Malay Peninsula, Polynesia (v. Martens).

Tryon unites here some eight species, but gives no reasons for his opinion. I feel pretty confident that in several of these cases here he is mistaken. Possibly some of his specimens have been badly defined, much confusion prevailing in museums as regards this species.

8. *Mitra* (*Cancilla*) *reticulata*, A. Adams (Pl. XIV. fig. 6).

Mitra reticulata, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 136.

September 9, 1874. Cape York, off Albany Island, Torres Strait. 3 to 12 fathoms.

Habitat.—Port Essington (Adams).

This species is like *Mitra incarnata*, Reeve, but in that species the spirals are fewer, the embryonic apex has four crimson whorls, and the first regular whorl is much higher and has four distinct spirals. *Mitra rosacea*, Reeve, is very near, but has a much finer apex and an impressed suture. In *Mitra reticulata*, where not injured by the acid of the cleaners, the sculpture is peculiarly sharp and delicate. In the deep suture there is a minute spiral thread.

9. *Mitra* (*Cancilla*) *rufescens*, A. Adams (Pl. XIV. fig. 5).

Mitra rufescens, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 137, sp. 32.

September 9, 1874. Cape York, off Albany Island, Torres Strait. 3 to 12 fathoms.

Habitat.—China Seas (Adams).

10. *Mitra* (*Cancilla*) *verrucosa*, Reeve.

Mitra verrucosa, Reeve, Proc. Zool. Soc. Lond., 1845, p. 47.
„ „ Reeve, Conch. Icon., vol. ii. pl. xxix. fig. 232.
„ „ Sowerby, Thes. Conch., vol. iv. pts. 31, 32, p. 33, sp. 492, pl. ccclxx. (xix. *Gen.*), figs. 381, 382.
„ (*Cancilla*) *verrucosa*, Tryon, Manual, vol. iv. p. 174, pl. lii. fig. 483.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Ticao, Philippines (Reeve), and Fiji (British Museum).

11. *Mitra* (*Costellaria*) *amanda*, Reeve.

Mitra amanda, Reeve, Proc. Zool. Soc. Lond., 1845, p. 59.
„ „ Reeve, Conch. Icon., vol. ii. pl. xxxviii. fig. 318.
„ „ Sowerby, Thes. Conch., vol. iv. pts. 31, 32, p. 33, sp. 446, pl. ccclxxvii. (xxvi. *Gen.*), fig. 592.
„ (*Costellaria*) *amanda*, Tryon, Manual, vol. iv. p. 176, pl. lii. fig. 508.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud.

Habitat.—Burias and Negros, Philippines (Reeve).

12. *Mitra* (*Costellaria*) *exasperata* (Chemnitz).

Voluta exasperata, Chemnitz, Conch. Cab., vol. x. p. 172, pl. cli. figs. 1440, 1441.
„ „ Dillwyn, Catalogue, vol. i. p. 543, sp. 100.
„ „ Wood, Ind. Test., p. 103, pl. xx. fig. 97.
Mitra exasperata, Lamarck (ed. Desh.), vol. x. p. 344, sp. 86.
„ „ Reeve, Conch. Icon., vol. ii. pl. xxi. fig. 162.
„ „ Küster, Conch. Cab. (ed. Küster), p. 45, sp. 12, pl. viii. figs. 13, 14.
„ „ Sowerby, Thes. Conch., vol. iv. pts. 31, 32, p. 28, sp. 384, pl. cccIxxi. (xx. *Gen.*) figs. 419, 424, 425.
Turricula (*Callithea*) *exasperata*, v. Martens, Moll. Mauritius, &c., p. 255.
„ (*Costellaria*) *exasperata*, Tryon, Manual, vol. iv. p. 180, pl. liii. figs. 541–544, pl. liv. figs. 545, 546.
„ „ „ E. A. Smith, "Alert" Collections, p. 498, No. 52.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Eastern Africa, Indian Ocean, Ceylon, Nicobars, Malay Peninsula (v. Martens). Seychelles, 4 to 12 fathoms (E. A. Smith).

There is a tendency in many museums to mix up this species and *Mitra arenosa*, Lam. That the species are different may be doubted, but the names at least should be kept distinct. Reeve, in uniting *Mitra arenosa* to *Mitra torulosa*, Lam. (in part as given by Kiener), says—*sancta quadam simplicitate*—"M. Kiener regards this species (*Mitra arenosa*) as a variety of the following" (*Mitra exasperata*, of which, however, in fact, Kiener says not one word), "but I do not think it expedient to follow his opinion. One half of the established species may be dispensed with were every one of two that approximate abandoned upon the discovery of their intermediate links." Could there be a franker enunciation of the principle, *Fiat species ruat cœlum?*

13. *Mitra* (*Costellaria*) *fusiformis*, Kiener.

Mitra fusiformis, Kiener, Iconog., p. 99, pl. xxix. fig. 97.
„ „ Reeve, Conch. Icon., vol. ii. pl. xvii. fig. 132.
„ „ Küster, Conch. Cab. (ed. Küster), p. 141, sp. 131, pl. xviie. fig. 7.
Turricula (*Costellaria*) *fusiformis*, Tryon, Manual, vol. iv. p. 175, pl. lii. figs. 484, 485, 487–489.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Philippines (Ticao), and Zanzibar (Reeve).

Sowerby (Thes. Conch., pts. 31, 32, p. 34, No. 460, fig. 384) says that his figure of *Mitra fusiformis* "corresponds with the figure of Chemnitz, which Kiener's figure does not." He is probably right, as Kiener does not seem to have been aware of Chemnitz's figure, which indeed I have sought in vain in Schröter's Index to the first ten vols. of the Cabinet, and in the vols. xi. and xii. themselves. Mr Tryon seems to have been more successful, but offers no help to other seekers.

14. *Mitra (Costellaria) nodilirata?* A. Adams.

Mitra nodilirata? A. Adams, Proc. Zool. Soc. Lond., 1851, p. 136, sp. 22.
„ „ Sowerby, Thes. Conch., vol. iv. pts. 31, 32, p. 26, sp. 351, pl. ccclxx. (xix. *Gen.*) fig. 385.
Turricula (Costellaria) mucronata var., Tryon, Manual, vol. iv. p. 174, pl. lii. fig. 480.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—?—(Adams).

I believe this to be a very small and pale variety of Adams' species.

Mr Tryon does not say why he unites this and a number of others to *Mitra mucronata*, Swainson. From examination of the specimens in the British Museum, where Adams' types are, as also of Shuttleworth's collection in the Berne Museum, my own opinion is that *Mitra nodilirata* is distinct from *Mitra mucronata*.

15. *Mitra (Costellaria) radius*, Reeve.

Mitra radius, Reeve, Proc. Zool. Soc. Lond., 1845, p. 57.
„ „ Reeve, Conch. Icon., vol. ii. pl. xxxvii. fig. 309.
„ „ Sowerby, Thes. Conch., vol. iv. pts. 31, 32, p. 29, sp. 399, pl. ccclx. (ix. *Gen.*) fig. 124.
Turricula radius, Tryon, Manual, vol. iv. p. 166, pl. xlix. fig. 406.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Corregidor, Philippines (Reeve).

16. *Mitra (Costellaria) sculptilis*, Reeve.

Mitra sculptilis, Reeve, Proc. Zool. Soc. Lond., 1845, p. 55.
„ „ Reeve, Conch. Icon., vol. ii. pl. xxxv. fig. 290.
„ „ Sowerby, Thes. Conch., vol. iv. pts. 31, 32, p. 34, sp. 465, pl. ccclxxvii. (xxvi. *Gen.*) fig. 596.
Turricula cælata, Tryon, Manual, vol. iv. p. 175, pl. lii. fig. 494.

September 9, 1874. Cape York, off Albany Island, Torres Strait. 3 to 12 fathoms.
September 18, 1874. Arrou Island, west of Papua.

Habitat.—Ticao, Philippines (Reeve).

The Challenger specimens differ from the types in tone of colour and are stumpier in form, but are, I believe, this species.

17. *Mitra (Pusia) cineracea*, Reeve.

Mitra cineracea, Reeve, Proc. Zool. Soc. Lond., 1845, p. 57.
„ „ Reeve, Conch. Icon., vol. ii. pl. xxxvii. fig. 311.

Mitra cineracea, Sowerby, Thes. Conch., vol. iv. pts. 31, 32, p. 32, sp. 438, pl. cccIxxiii. (xxii. *Gen.*) figs. 494, 495 (*Mitra judæorum*, Dohrn, var.)
Turricula (*Costellaria*) *cineracea*, Tryon, Manual, vol. iv. p. 175, pl. lii. fig. 492.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 fathoms. Sand and shells.

Habitat.—Mindanao, Philippines (Reeve).

18. *Mitra* (*Pusia*) *nodulifera*, A. Adams.

Mitra nodulifera, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 140, sp. 48.
„ „ Sowerby, Thes. Conch., vol. iv. pts. 31, 32, p. 32, sp. 436, pl. cccIxxv. (xxiv. *Gen.*) fig. 530.
„ (*Turricula*) *nodulifera*, E. A. Smith, Mar. Shells Solomon Islands, Journ. Linn. Soc. Lond., vol. xii. p. 550, No. 53.
Turricula (*Costellaria*) *nodulifera*, Tryon, Manual, vol. iv. p. 170, pl. L. fig. 442.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—?—(Adams); the Solomon Islands and Philippines (E. A. Smith).

19. *Mitra* (*Callithea*) *obeliscus*, Reeve.

Mitra obeliscus, Reeve, Proc. Zool. Soc. Lond., 1844, p. 175.
„ „ Reeve, Conch. Icon., vol. ii. pl. xv. fig. 107.
„ „ Sowerby, Thes. Conch., vol. iv. pts. 31, 32, p. 36, sp. 486, pl. cccIx. (ix. *Gen.*) figs. 126, 127.
„ (*Turricula*) *obeliscus*, E. A. Smith, Mar. Shells Solomon Islands, Journ. Linn. Soc. Lond., vol. xii. p. 549, No. 47.
„ „ „ Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 214.
Turricula obeliscus, v. Martens, Moll. Mauritius, &c., p. 254.
Mitra (*Callithea*) *obeliscus*, E. A. Smith, Andaman Shells, Proc. Zool. Soc. Lond., 1878, p. 815, No. 47.
Turricula (*Costularia*) *obeliscus*, Tryon, Manual, vol. iv. p. 179, pl. liii. fig. 535.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Negros, Philippines (Reeve); Torres Strait, 11 to 30 fathoms (Brazier); Solomon and Andaman Islands (E. A. Smith); Mauritius and Indian Ocean (v. Martens).

This species is not unfrequently confounded with *Mitra delicata*, A. Adams, but is markedly more slender, has the pillar lip longer, thinner, and more twisted; the teeth on the outer lip, too, are much deeper within the throat.

20. *Mitra* (*Callithea*) *granosa* (Chemnitz).

Chemnitz, Conch. Cab., vol. iv. p. 222, pl. cxlviii. figs. 1373, 1374 (not figs. 1367, 1368).
Voluta granosa, Chemnitz, Conch. Cab., vol. x. pp. 139, 173, pl. cli. figs. 1442, 1443.

Voluta sanguisuga (not of Linne), Wood, Ind. Test., p. 104, pl. xx. fig. 105.
Mitra sanguisuga, Lamarck, Anim. s. vert., vol. vii. p. 310, and (ed. Desh.) vol. x. p. 319, sp. 31.
" " Deshayes, Encycl. méthod., vers, vol. ii. p. 454, No. 18, pl. ccclxxiii. fig. 10.
" " Kiener, Iconog., p. 80, sp. 78, pl. xxiv. fig. 75.
" " Küster, Conch. Cab. (ed. Küster), p. 58, No. 28, vol. x. figs. 10, 11.
" " Reeve, Conch. Icon., vol. ii. pl. xiv. fig. 99.
" " Sowerby, Thes. Conch., vol. iv. pts. 31, 32, sp. 394, pl. ccclix. (viii. *Gen.*) figs. 91*–94*.
Turricula sanguisuga, var. *stigmaria*, Tryon, Manual, vol. iv. p. 165, pl. xlviii. fig. 395.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Ticao, Philippines (Reeve).

I have carefully examined a very large series of specimens of *Mitra sanguisuga*, Linne, and *Mitra stigmataria*, Lam., both in the British Museum and in foreign collections, and the opinion I formed was that the species ought to be united. In this way we should also escape the confusion which Lamarck (see Deshayes' note, *loc. cit. supra*) made of the nomenclature. I have thought it better, however, to avoid that question here, and to confine the citation of authorities to those which belong to the specimen of the Challenger. It is singularly beautiful, and has no transverse bands of colour, the ground between the ribs being of a rich cream colour, and the ribs themselves brilliant vermilion. Chemnitz's figure 1374 approaches, but, withal, falls far short of the features I refer to.

Family Volutidæ, Fleming, 1828.

Genera. 1. *Voluta*, Linne. 2. *Provocator*, Wats. 3. *Guivillea*, Wats. 4. *Volutomitra*, Gray. 5. *Marginella*, Lam.

1. *Voluta*, Linne, 1758.

Species.

1. *Voluta* (*Vespertilio*) *sophia*, Gray.
2. *Voluta* (*Vespertilio*) *vespertilio*, Linne.
3. *Voluta* (*Zidona*) *angulata*, Swains.
4. *Voluta* (*Cymbiola*) *ancilla*, Soland.
5. *Voluta* (*Cymbiola*) *lutea*, Wats.
6. *Voluta* (*Scaphella*) *turneri*, Gray.
7. *Voluta* (*Scaphella*) *undulata*, Lam.
8. *Voluta* (*Alcithoe*) *gracilis*, Swains.
9. *Voluta* (*Volutilithes*) *abyssicola*, Ad. and Rve.

1. *Voluta* (*Vespertilio*) *sophia*, Gray.

Voluta sophia, Gray, Ann. and Mag. Nat. Hist., ser. 1, 1846, vol. xviii. p. 431.
" " Reeve, Conch. Icon., 1849, vol. vi. pl. x. fig. 21.
" " Sowerby, Thes. Conch., pt. 23, p. 270, sp. 65, pl. cclxi. fig. 132.
" (*Scapha*) *sophia*, Angas, Distrib. Voluta Austral. Seas, Proc. Zool. Soc. Lond., 1864, p. 52, sp. 13.
Voluta sophia, Cox, Distrib. Austr. Volutes, p. 17.

Voluta sophia, Crosse, Cat. Voluta, Journ. de conch., 1871, vol. xix. p. 279, sp. 13.
„ (*Vespertilio*) *sophia*, Kobelt, Catalog Voluta, Jahrb. deutsch. malak. Gesellsch., 1877, p. 304, sp. 12.
Aulica sophia, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 205, No. 23.
Voluta (*Vespertilio*) *sophiæ*, Tryon, Manual, vol. iv. p. 87, pl. xxv. fig. 57.

September 8, 1874. Off Albany Island, Cape York, Torres Strait. 3 to 12 fathoms.

Habitat.—Port Essington, North Australia, Torres Strait, from low water to 30 fathoms (Brazier).

2. *Voluta* (*Vespertilio*) *vespertilio*, Linne, var. *pellis serpentis*, Lamarck.

Voluta vespertilio, Linne, Syst. Nat. (ed. 12), p. 1194, No. 428.
Martini, Conch. Cab., vol. iii. p. 245, pl. xcviii. figs. 936–940.
„ „ Chemnitz, Conch. Cab., vol. ix. p. 53, pl. civ. figs. 888, 889; vol. x. p. 148, pl. cxlix. figs. 1399, 1400; vol. xi. p. 14, pl. clxxvi. figs. 1699, 1700.
„ „ Wood, Ind. Test., p. 107, pl. xxi. fig. 151.
„ *pellis serpentis*, *V. vespertilio*, *V. mitis*, and *V. serpentina*, Lamarck, Anim. s. vert., vol. vii. pp. 336, 338, and (ed. Desh.), vol. x. pp. 386–388, 390, sp. 16–18, 20.
„ *pellis serpentis*, Deshayes, Encycl. méthod., vers, vol. iii. p. 1139, sp. 12, pl. ccclxxxviii. figs. 1, 2.
„ *vespertilio*, *V. pellis serpentis*, and *V. mitis*, Kiener, Iconog., pp. 21, 22, 24, sp. 16–18, pl. xx. xxi. figs. 1, 2, pl. xxiii. xxiv. figs. 1, 2.
„ *mitis*, *V. pellis serpentis*, *V. serpentina*, *V. lineolata*, and *V. vespertilio*, Küster, Conch. Cab. (ed. Küster), p. 190, sp. 38, p. 192, sp. 39, p. 194, sp. 41, p. 197, sp. 44, pl. xx. fig. 5, pl. xxii. figs. 1–4, pl. xxviii. figs. 7, 8, pl. xxxiii. figs. 3, 4, pl. xxxiv. figs. 1–4, 9, 10, pl. xxxvi. figs. 1–3, pl. xxxviii. fig. 6.
„ *vespertilio*, Reeve, Conch. Icon., vol. vi. pl. v. fig. 11 a, b, c, d.
„ „ Quoy and Gaimard, "Astrolabe," Zool., vol. ii. p. 629, pl. xliv. figs. 3–5.
„ „ Sowerby, Thes. Conch., vol. i. pt. 5, p. 201, sp. 22, pl. xlvii. figs. 15–23, pl. li. fig. 67.
„ „ Hanley, Ipsa Linn. Conch., pp. 232, 508.
„ „ Crosse, Cat. Voluta, Journ. de conch., 1871, vol. xix. p. 277, sp. 8.
„ (*Vespertilio*) *vespertilio*, Kobelt, Catalog Voluta, Jahrb. deutsch. malak. Gesellsch., 1877, p. 303, sp. 7.
„ „ „ Tryon, Manual, vol. iv. p. 86, pl. xxv. figs. 43–49, 52.

February 1, 1875. Samboangan. 10 fathoms.

Habitat.—The Indian Ocean, Moluccas, Papua. Kiener and Küster add New Holland, but as Cox, in his monograph on the Australian Volutes, omits this species, it cannot be reckoned to that province.

3. *Voluta* (*Zidona*)[1] *angulata*, Swainson.

Voluta angulata, Swainson, Exot. Conch., p. 17, pl. ix. x.
„ *nasica*, Schubert and Wagner, Conch. Cab., vol. xii. p. 10, pl. ccxvii. figs. 3031, 3032.

[1] It is hardly worth while to discuss questions of priority for anything so arbitrary and subjective as subgenera, but d'Orbigny's name of *Volutella* for this group of Volutes had already, before 1839, when he published it, been worn threadbare by Perry in 1811, and by Swainson in 1830; not to speak of Forskjæl and Tode's earlier and separate use of it in botany.

Voluta angulata, Kiener, Iconog., p. 65, sp. 55, pl. xxxviii. figs. 1, 2.
„ „ Küster, Conch. Cab. (ed. Küster), p. 171, sp. 20, pl. xxv. figs. 1, 2, pl. xxxvi. fig. 5.
„ „ Lamarck (ed. Desh.), vol. x. p. 413, sp. 54.
Volutella angulata, d'Orbigny, Voy. Amér. mérid., vol. v. p. 423, pl. lx. figs. 1–3.
„ „ Reeve, Conch. Icon., vol. vi. pl. xv. fig. 35.
„ „ Sowerby, Thes. Conch., vol. i. pt. 5, p. 202, sp. 23, pl. xlvii. figs. 13, 14.
Voluta (*Volutella*) *angulata*, Crosse, Cat. Voluta, Journ. de conch., 1871, vol. xix. p. 301, sp. 65.
„ „ „ Kobelt, Catalog Voluta, Jahrb. deutsch. malak. Gesellsch. 1877, p. 311, sp. 65.
„ „ „ Tryon, Manual, vol. iv. p. 98, pl. xxix. figs. 112, 121.

Station 321. February 25, 1876. Lat. 35° 2′ S., long. 55° 15′ W. Monte Video. 13 fathoms. Mud.

Habitat.—South America, from Rio de la Plata to San Blas Bay, Patagonia (Crosse).

4. *Voluta* (*Cymbiola*) *ancilla*, Solander.

Voluta ancilla, Solander, Portland Cat., p. 137, No. 1873.
„ *gracilis*, Wood, Ind. Test., p. 209, Suppl., pl. iii. fig. 2.
„ *ancilla*, Lamarck, Anim. s. vert., vol. vii. p. 343, and (ed. Desh.) vol. x. p. 397, sp. 33.
„ „ Deshayes, Encycl. méthod., vers, vol. iii. p. 1141, sp. 16, pl. ccclxxxv. fig. 3.
„ „ Kiener, Iconog., p. 39, sp. 32, pl. li. (*Voluta magellanica*).[1]
„ „ Küster, Conch. Cab. (ed. Küster), p. 153 (description, but name and references must be brought from p. 152), pl. xxxii. fig. 4 (*alone*).
„ „ d'Orbigny, Amér. mérid., vol. v. p. 425, No. 333.
„ *magellanica*, Sowerby, Thes. Conch., vol. i. pt. 5, pl. liv. fig. 99 (but not the text of sp. 27 on p. 204).
„ *ancilla*, Reeve, Conch. Icon., vol. vi. pl. xvii. fig. 39.
„ *magellanica*, Gould, U.S. Expl. Exped. Shells, p. 278, pl. xx. fig. 357.
„ *ancilla*, Crosse, Cat. Voluta, Journ. de conch., 1871, vol. xix. p. 299, sp. 61.
„ (*Cymbiola*) *ancilla*, Kobelt, Catalog Voluta, Jahrb. deutsch. malak. Gesellsch., 1877, p. 310, sp. 61.
„ „ „ Tryon, Manual, vol. iv. p. 97, pl. xxix. fig. 110.

Station 315. January 26, 1876. Lat. 51° 40′ S., long. 57° 50′ W. Port William, Falkland Islands. 12 fathoms. Sand and gravel.

Habitat.—Patagonia, and Strait of Magellan (d'Orbigny).

5. *Voluta* (*Cymbiola*) *lutea*, Watson (Pl. XV. fig. 3).

Cymbiola lutea, Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 331.

Station 166. June 23, 1874. Lat. 38° 50′ S., long. 169° 20′ E. About 200 miles west of Cape Farewell, New Zealand. 275 fathoms. Globigerina ooze. Bottom temperature 50·8°.

[1] The alteration of the number of the plate is the easiest correction of Kiener's mistake here. His text is quite correct, and only plates li. and lii. have been transposed in the numbering and consequently in the references.

Shell.—Fusiform, strongish, pale buff, with a high blunt spire, largish mouth, slightly reverted outer lip, and four teeth on the pillar. *Sculpture:* Longitudinals—on the upper whorls there are a few slight narrow ribs which are almost obsolete on the later whorls; the lines of growth are many and hair-like. Spirals—quite obsolete. The columellar swelling in front is very small and slight. *Colour* ashy white over pale buff, entirely without gloss, the outer lip and the body-glaze are rich buff, paler inwards. *Spire* high, a little irregularly bent, subscalar. *Apex* blunt, mamillary, impressed. *Whorls* $6\frac{3}{4}$: they are convex, above contracted into the suture, perpendicular below; after the first three they increase rapidly; the last is slightly ventricose, long, attenuated in front. *Suture* oblique, slightly impressed, irregular. *Mouth* long, but not wide, oblique, with its two sides nearly parallel, bluntly pointed above, ending below in a broad, shallow, slightly emarginated, minutely bordered canal. *Outer lip* patulous, thin, but expanded and rounded on the edge; it rises on the penultimate whorl at its junction, and is here drawn back into a slight sinus with a very reverted edge. *Inner lip* spreads widely as a thin glaze on the body; above it is scarcely convex, hardly concave in the middle, perpendicular below, where are four not strong, equal, concealed, pale-coloured, very oblique teeth; obliquely cut off, twisted and rounded in front into a prominent thin point. H. 2·75 in. B. 1·25. Penultimate whorl, height 0·53. Mouth, height 1·73, breadth 0·6.

This species is suggestive of many others, and may be compared with *Voluta rupestris*, Gm., *Voluta pacifica*, Sol., *Voluta lyriformis*, Vigors, and *Voluta fulminata*, Lam., but resembles most *Voluta megaspira*, Sow., having the same long thickened lip and form of body-whorl; but in that species the spire is higher and is fine, and the apex is tumid.

6. *Voluta* (*Scaphella*) *turneri*, Gray.

Voluta turneri, Gray, Griffith's An. King., Moll., vol. xii. pp. 72, 601, pl. xl. fig. 1.
„ *broderipii*, Gray, Ann. and Mag. Nat. Hist., 1864, ser. 3, p. 237.
„ *turneri*, Reeve, Conch. Icon., 1849, vol. vi. pl. xii. fig. 27.
„ (*Scaphella*) *turneri*, Chenu, Manuel, vol. i. p. 189, fig. 964.
„ *Ellioti*, Sowerby, Journ. de conch., 1864, vol. xii. p. 338, and 1865, vol. xiii. p. 25, pl. iii. fig. 19.
„ „ Sowerby, Thes. Conch., pt. 23, p. 272, sp. 74, pl. cclx. (xi. *Gen.*) figs. 126, 127.
„ (*Amoria*) *turneri*, Angas, Distrib. Voluta Austr. Seas, Proc. Zool. Soc. Lond., 1864, p. 53, sp. 22.
„ *turneri*, Crosse, Cat. Voluta, Journ. de conch., 1871, vol. xix. p. 290, sp. 38.
„ „ Cox, Distrib. Austr. Volutes, p. 15.
„ (*Amoria*) *turneri*, Kobelt, Catalog Voluta, Jahrb. deutsch. malak. Gesellsch., 1877, p. 307, sp. 38.
„ „ „ Tryon, Manual, vol. iv. p. 92, pl. xxvii. fig. 85, pl. xxx. fig. 123.

Station 190. September 12, 1874. Lat. 8° 56′ S., long. 136° 5′ E. Arafura Sea. 49 fathoms. Green mud.

Habitat.—North-east Australia (Angas).

Voluta ellioti, Sow., is treated here as a mere variety, that being the opinion I formed after a careful study of the various specimens in the British Museum.

7. *Voluta* (*Scaphella*) *undulata*, Lamarck.

Voluta undulata, Lamarck, Annales du Musée, vol. v. p. 157, pl. xii. fig. 1, and vol. xvii. p. 71, sp. 36.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 345, and (ed. Desh.) vol. x. p. 401, sp. 38.
„ „ Dillwyn, Cat., vol. i. p. 571, No. 160.
„ „ Wood, Ind. Test., p. 109, pl. xxi. fig. 166.
„ „ Deshayes, Encycl. méthod., vers, vol. iii. p. 1142, sp. 19.
„ „ Quoy and Gaimard, "Astrolabe," Zool., vol. ii. p. 623, pl. xliv. figs. 1, 2.
„ „ Schubert and Wagner, Conch. Cab., vol. xii. p. 8, pl. ccxvi. figs. 3027, 3028.
„ „ Kiener, Iconog., p. 52, sp. 44, pl. xliv. fig. 1.
„ „ Küster, Conch. Cab. (ed. Küster), p. 163, sp. 13, pl. iii. figs. 3, 4.
„ „ Reeve, Conch. Icon., vol. vi. pl. xi. fig. 26.
„ „ Gray, Fig. Moll. Anim., vol. i. pl. xxvii. fig. 1.
„ „ Sowerby, Thes. Conch., pt. 5, p. 196, sp. 9, pl. xlviii. figs. 28, 29 (as *Voluta angasii*, Sow., Thes. Conch., pt. 23, p. 271, sp. 73).
„ (*Amoria*) *undulata*, Angas, Distrib. Voluta Austral. Seas, Proc. Zool. Soc. Lond., 1864, p. 52, sp. 18.
Amoria undulata (?), Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 165, No. 55.
Voluta (*Amoria*) *angasi* (?), Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 193, No. 43.
„ *angasi*, Cox, Distrib. Austral. Volutes, p. 12, sp. 14.
„ (*Amoria*) *undulata*, Crosse, Cat. Voluta, Journ. de Conch., 1871, vol. xix. p. 288, sp. 36.
„ „ „ Kobelt, Catalog Voluta, Jahrb. deutsch. malak. Gesellsch., 1877, p. 307, sp. 36.
„ „ „ Tryon, Manual, vol. iv. p. 92, pl. xxviii. figs. 97, 98.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 fathoms. Sand and shells.

Habitat.—South Australia.

I have no doubt that *Voluta angasii*, Sow., should be united to Lamarck's species. At the same time it would appear (*teste* Angas, *loc. cit. supra*) that there is some difference in form between the shells of this species found in Spencer Gulf, and those found further east, but if any distinction is to be made between the two, the question will arise, which answers to Lamarck's type of the species? I have not had an opportunity of examining his specimens, nor of consulting his figure in the Annals (*loc. cit. supra*); and in the Voyage of Péron, to whom Lamarck owed his specimens, no indication whence the specimens came is given, but certainly (whatever Lamarck's figures may be) all the other figures which I have quoted seem to represent the broad stumpy form to which Mr Sowerby has attached Mr Angas' name, rather than the long and narrow shell he has called *Voluta undulata*, Lam. That is why I have put a query to the references given to both of Mr Angas later lists. In that of 1864 he evidently regarded the two forms as belonging to one species.

8. *Voluta* (*Alcithoe*) *gracilis*, Swainson.

Cymbiola gracilis, Swainson, Journ. Science, vol. xvii. p. 32; Exot. Conch., p. 20, pl. xlii.
Voluta fusus (?) Quoy and Gaimard, "Astrolabe," Zool., vol. iii. p. 627, pl. xliv. figs. 7, 8.
„ *gracilis*, Reeve, Conch. Icon., 1849, vol. vi. pl. xvii. fig. 40.
„ *fusus* (?) Kiener, Iconog., p. 46 (remarks on *Voluta elongata*), and pl. xlv. fig. 2.
„ (*Scapha*) *gracilis*, Angas, Distrib. Voluta Austral. Seas, Proc. Zool. Soc. Lond., 1864, p. 52, sp. 12.
„ *gracilis*, v. Martens, Crit. List. N. Zeal. Moll., p. 22.
„ „ Hutton, Manual, p. 62.
„ „ Crosse, Cat. Voluta, Journ. de conch., 1871, vol. xix. p. 295, No. 52.
„ (*Scapha*) *gracilis*, Kobelt, Catalog Voluta, Jahrb. deutsch. malak. Gesellsch., 1877, p. 309, No. 52.

Station 167A. June 27, 1874. Lat. 41° 4′ S., long. 174° 19′ E. Queen Charlotte Sound, Cook Strait, New Zealand. 10 fathoms. Mud.

Habitat.—Pacific (Swainson), New Zealand (Angas and Hutton).

The Challenger specimen is young, and has the ribs finer, more prolonged, and more numerous than the British Museum specimens; but is, I have no doubt, the species these represent, which it may be well to observe is not *Voluta gracilis* of Wood (Ind. Test. p. 209, Suppl., pl. iii. fig. 2) = *Voluta magellanica*, Sow.—(if not a variety of that of Chemnitz, which Mr Hanley denies)—nor yet the *Voluta gracilis* of Gray in Griffiths' An. King., vol. xii. pp. 72 and 601, pl. xl. fig. 4, which seems to be a variety of *Voluta pacifica*, Solander. Sowerby (Thes. Conch., vol. i. pt. 5, p. 206, sp. 32, pl. lv. figs. 117, 118) seems to have had before him this species figured by Gray (*loc. cit.*), and not that of Swainson. This was, I think, also the case with Cox (Distrib. Austral. Volutes, p. 21, sp. 45), and with Tryon (Manual, vol. iv. p. 94, pl. xxviii. fig. 99). I have quoted Quoy and Gaimard above for *Voluta fusus*, and also Kiener with hesitation for both. Küster (Conch. Cab., p. 159, pl. xxxvi. fig. 4) and Kobelt (Jahrb., p. 309) regard that species as the young of *Voluta elongata*, Swain. (which the latter further regards as the young of *Voluta pacifica*, Sol.) At the same time, the figures of Quoy and Gaimard seem rather to suggest *Voluta gracilis* than *Voluta elongata*. In referring to Sowerby's *Voluta gracilis*, Thes. Conch. (*loc. cit.*), it may be well to call attention to the extraordinary confusion of his reference there to Kiener.

9. *Voluta* (*Volutilithes*) *abyssicola*, Adams and Reeve (Pl. XV. fig. 1).

Voluta abyssicola, Adams and Reeve, Zool. "Samarang," Moll., p. 25, pl. vii. fig. 6.
„ (*Volutilithes*) *abyssicola*, Adams, Genera, vol. i. p. 167, vol. ii. p. 618, vol. iii. pl. xvii. fig. 8.
„ „ „ Chenu, Manuel, vol. i. p. 190, fig. 980.
„ *abyssicola*, Reeve, Conch. Icon., 1849, vol. vi. pl. xxii. fig. 58.
„ „ Sowerby, Thes. Conch., pt. 23, p. 270, sp. 59, pl. cclx. fig. 124.
„ „ Crosse, Cat. Voluta, Journ. de conch., 1871, p. 305.
„ „ v. Martens, Südafrik. Moll., Jahrb. deutsch. malak. Gesellsch., 1874, p. 140.
„ (*Volutilithes*) *abyssicola*, Kobelt, Catalog Voluta, Jahrb. deutsch. malak. Gesellsch., 1877, p. 312.
„ „ „ Tryon, Manual, vol. iv. p. 100, pl. xxix. fig. 120.
„ „ „ Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 327.

Station 141. December 17, 1873. Lat. 34° 41′ S., long. 18° 36′ E. 25 miles S.S.E. from Cape of Good Hope. 98 fathoms. Green sand. Bottom temperature 49·5° F.

Station 142. December 18, 1873. Lat. 35° 4′ S., long. 18° 37′ E. 45 miles S.S.E. from Cape of Good Hope. 150 fathoms. Green sand. Bottom temperature 47° F.

Shell.—Fusiform, thin, with a rather high subscalar spire, a small rounded apex, a very long base, a slightly thickened, reverted, and toothed outer lip, a long, narrowish mouth, a twisted many-toothed pillar, and an expanded inner lip. *Sculpture:* Longitudinals—there are on the last whorl about 70 riblets or flatly rounded threads following the lines of growth, which last roughly and closely score the whole surface. Spirals—there are from 30 to 40 rather high and broader threads covering the whole surface; those below the suture are slightly stronger than the others; the first in particular is so, and is followed by a deeper furrow; all these in crossing the longitudinals tend to rise into small tubercles: below the suture is a very small flattened shoulder with an outward droop; this on the upper whorls is slightly excavated. The whole surface is fretted with fine microscopic scratches. *Colour* pale ashy brown, glossy. *Spire* subscalar, high, its height being to its breadth in the proportion of 13 to 6. *Apex* small, eroded. *Whorls* 8, flatly convex, very slightly shouldered below the suture. *Suture* very oblique and strongly marked. *Mouth* very small for the genus, long and narrow, with a small open canal in front. *Outer lip* very slightly sinuated and ascending above, narrowly reversed, and a little thickened, with many close-set, equal, short, narrow teeth; at the point it is very slightly sinuated and patulous, but not reversed. *Inner lip* spreads in a broad thin glaze across the body; it is slightly oblique, hardly concave, a little twisted and bent back in front, with (about the middle) 8 to 10 larger or smaller teeth somewhat irregularly distributed. H. 3·8 in. B. 1·5. Penultimate whorl, height 0·6. Mouth, height 2·6, breadth 0·75.

This interesting species has hitherto been known only in the solitary type specimen obtained by Sir E. Belcher in H.M.S. "Samarang," 1843, off the Cape at a depth of 132 fathoms, and described by A. Adams and L. Reeve in the Mollusca of the Expedition. That specimen being a very young shell, a redescription from the specimens of the Challenger was necessary. Of these there are three—one, the largest, described above; the second with $6\frac{3}{4}$ whorls, but with a fully developed outer lip, itself an aftergrowth on an earlier lip-edge still existing within the mouth; the third has 6 whorls, but has the sharp thin edge and undeveloped pillar-teeth of the "Samarang" specimen. The later development of the shell greatly detracts from the "sharply defined pattern of lattice-work," the sculpture becoming much less crisp; the elongation and contraction of the body-whorl diminishes the relative breadth, the increasing obliquity of the whorls elevates the spire, and the subsutural canal ceases to be excavated and becomes merely a small oblique shelf. All these changes modify considerably the relations of this Volute to the Eocene species referred to by Adams and Reeve, and also by Mr Edwards in his "Eocene Mollusca" (Palæont. Soc.), pp. 146, 155, and in

particular to *Voluta crenulata*, Lam. (see Edwards, p. 154, pl. xx. fig. 1); but while diminishing some features of distinction dwelt on by these authors, they so strongly develop others, that the difference between the living and the fossil species stands out more strongly than ever. The size and form are, indeed, so utterly dissimilar, as at once to constitute a marked distinction. At the same time, the species does interestingly represent the older forms, in shape and sculpture recalling *Voluta digitalina*, Lam., *Voluta crenulata*, Lam., and *Voluta elevata*, Sow., perhaps in particular; the thickening and toothing of the outer lip resembles exactly that of *Voluta luctatrix*, Solander, and *Voluta ambigua*, Sol., while the toothing of the pillar is like that of *Voluta nodosa*, Sow. Of course whatever generic value "*Volutilithes*" of Swainson may have, Adams's definition of the genus as having a "columella with numerous faint rudimentary or obsolete plaits; outer lip thin, simple," must be modified. It never suited more than one or two of the fossil species, perhaps not even these; it proves inaccurate for the one living representative of the group except in its immature state.

2. *Provocator*, Watson, 1881.

Provocator, Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 329.

Shell smooth, fusiform; having the apex of *Ancillaria*, the enamelled suture of *Bullia*, the pillar-folds of *Voluta*, and the sinus of *Pleurotoma*.

I believe this very curious form to be essentially a Volute, in which genus the group of *Cymbium* and forms like *Voluta scapha*, Gm., *Voluta imperialis*, Lam., and many others present the sutural sinus, while *Zidona* has the enamelled spire. The name of *Challengeria* being preoccupied, I have been obliged to reproduce it as I could in Latin.

Provocator pulcher, Watson (Pl. XIII. fig. 5).

Provocator pulcher, Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 330.

Station 149J. January 29, 1874. Lat. 48° 43′ S., long. 69° 15′ E. Off Cumberland Bay, Kerguelen. 105 fathoms. Volcanic mud.

Station 150. February 2, 1874. Lat. 52° 4′ S., long. 71° 22′ E. Between Kerguelen and Heard Islands. 150 fathoms. Coarse gravel. Bottom temperature 35·2° F.

Shell.—Smooth, fusiform, rather thin, with a high, sharp, slightly enamelled apex, a contracted and elongated base, a straight two-toothed pillar, a large mouth, a prominent angulated and patulous outer lip, and a strongly marked sinus at the enamelled suture. *Sculpture:* Longitudinals—the smooth surface is scored with fine hair-like flexuous lines of growth. Spirals—there are some lines in the substance of the shell which are best recognised without a lens: there are also some irregular white lines connected with some slight thickening of the glaze; below the scar of the sutural sinus is an obsolete angulation. Besides all this, the surface of the enamel of the shell is obsoletely tubercled

obliquely. *Colour* rich buff, thinly overlaid with a whitish glaze; this for some distance below the suture is covered with a dullish buff enamel. *Spire* high, conical, subscalar. *Apex* small and sharp, being originally mamillated, but subsequently eroded and enamelled. *Whorls* 7 to 8, at the top very slightly shouldered and angulated, then flatly convex. *Suture* oblique, completely buried in a thick coat of glaze which fills the sutural angle, and which embraces the whole apex. *Mouth* large, pear-shaped, with a shallow, broad, obliquely truncated canal in front. *Outer lip* thin and rounded on the edge; it is cut off from the body by a strongly marked sinus, below which it advances prominently into a rounded angle, retreating slightly, but steadily, from this point throughout its whole course; it is straight and slightly contracted above, roundly angulated and patulous below the middle, straight and patulous and cut off backwards from this point to the edge of the canal. *Inner lip* scarcely convex above, little concave in the middle, direct with a very slight twist and no swelling below; near the edge are two narrow, slight, white, very oblique teeth, of which the upper is sometimes absent: the narrow sharp lamina of the pillar-edge in front is the extreme point of the shell. H. 3·6 in. B. 1·8. Penultimate whorl, height 0·8. Mouth, height 2, breadth 0·95.

This is an extremely peculiar form of great beauty. It is higher and narrower than the measurements would suggest, the outthrow of the outer lip being great, but of short continuance. It has a strong general resemblance to *Ancillaria glabrata*, Linne, or *Ancillaria vernedei*, Sow., or other smaller species of that form, of which it simulates the subperipheral band. In *Voluta pallida*, Gray, some of the peculiar features of this species—such as the sutural sinus, the enamelled spire, and the outthrow of the outer lip at its lower corner—are found, though in a much feebler form.

The swelling on the pillar which is characteristic of the Volutes, and is really the scar of the old columellar sinus, is in this species quite absent in front, but is just recognisable on the back of the shell in the flexure of the lines of growth.

3. *Guivillea*, Watson, 1881.

Wyvillea,[1] Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 332.

Animal a typical Volute.

Shell ovate, cymbiform, thin, rough; spire high, scalar; apex mamillate and irregular; suture canaliculate; mouth large, ovate; inner lip with a widespread thinnish callus; pillar perpendicular, with a very slight turn; it has no teeth, but an abrupt break of the edge about the middle of its length.

[1] This generic appellation, derived from the middle name of Sir C. Wyville Thomson, proves to have been preoccupied in 1880 by Mr Haswell for a genus of Amphipodous Crustaceans, published in the *Proceedings of the Linnean Society of New South Wales*, vol. iv. p. 336. In these circumstances, I have made the least possible change, and retained the association of the word by falling back on the older form of my friend's name.

This genus differs from *Cymbiola* of Swainson (the description of which by Adams I have nearly followed) notably in the texture of the shell which is extremely delicate but on the surface rough, in the suture which is canaliculate, and in the straight pillar which is without teeth but has an abrupt break on the edge. In all the Volutes the last tooth consists of a lamina attached to, or consisting of, the edge of the pillar, the twist on which throws this lamina out as an oblique fold whose abrupt slope looks up the pillar. In *Guivillea*, on the other hand, the lamina has scarcely a turn at all, and only presents a tooth in consequence of being suddenly arrested and diminished in size; from this results a tooth whose abrupt slope looks down the pillar.

In connection with this genus it may be well to recall the *Halia* of Risso, which has some vague features of superficial resemblance; but in that genus the columellar tooth, which is almost terminal, results from the extreme and sudden twisting of the pillar.

I have not given a detailed description of the animal, as the dissection and full representation of it in all its parts is to be supplied elsewhere.

Guivillea alabastrina, Watson (Pl. XV. fig. 2).

Wyvillea alabastrina, Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 332.

Station 147.- December 30, 1873. Lat. 46° 16′ S., long. 48° 27′ E. Between Marion Island and the Crozets. 1600 fathoms. Diatom ooze. Bottom temperature 34·2°.

Animal has an enormous bifid foot, square in front, pointed and high behind; compared to this part the head, mantle, and body are small; the snout is largish and subcylindrical, above it the great velum extends widely, and is collected into a subconical protuberance at the corners, from which rise the rounded conical tentacles; no trace of eyes exists. Above the head is the mantle, expanded on the left into the rather short, stumpy, and proboscis-like siphon, which is open below. The reproductive organs, possibly to some extent everted at death, appear like a large tumour on the neck, a considerable way behind the right tentacle. The skin is not tubercled. There is no operculum.

Shell.—Large, high, thin, white, alabaster-like in texture, with an oval body, a smallish high scalar spire, ending in an irregular, blunt, but pointed, twisted apex; it has a large oval mouth, a narrow, patulous, not reverted, outer lip, a broad, shallow, truncated canal in front, a broadly spread inner lip, and a straight, toothless, but interrupted pillar. *Sculpture:* The whole surface is minutely granulated, and has the appearance of having been dipped in thin, rather sandy whitewash, and then roughly wiped, especially round the suture. Longitudinals—there are rounded irregular lines of growth, which are generally slight, but all round the mouth-edge a few become somewhat strong. Spirals—there are a few unequal and irregular, broad, scarcely raised threads; near the suture are some irregular, sharp, quite superficial lines like the marks of rough wiping. *Colour* alabaster-white, with a roughened, dead, eroded surface. *Spire* high, rather small, scalar. *Apex* is blunt, but projects sharply to one side in an excentric and irregular manner. *Whorls*

5¼, of rapid increase, droopingly shouldered above, then convex, perpendicular below, with a slight tendency to contraction above the suture; the last especially is ventricose and oval, with very regular curves. *Suture* very oblique, deeply impressed, and a little canaliculate. *Mouth* oval, straight, rounded above, and not at all sinuated; it ends below in a broad, open, shallow, scarcely emarginated canal. *Outer lip* very regularly curved, with a narrow straight edge, which is prominent and patulous, but not in the least reverted; it does not rise at all on the body-whorl. *Inner lip* spreads on the body very widely, but somewhat thinly, as a straw-coloured glaze; above it is very oblique, but scarcely convex; it forms an angle at its junction with the pillar, which is perpendicular and scarcely twisted; the rounded edge is formed by a narrowish thickened white callus, which about half-way down is suddenly contracted and slightly turned round so as to form a kind of tooth or projecting corner, below which the whole edge is smaller. H. 6·6 in. B. 3·15. Penultimate whorl, height 1·3. Mouth, height 4·1, breadth 2..

Bowdich's figure (Conchology, pt. 1, p. 68, pl. xviii. fig. 2) of *Voluta* (*Cymbium*) *æthiopica*, Linne, is the best representation I know of the animal of *Voluta*, and might almost be taken to represent the Challenger species. It is copied by Gray in Moll. Anim., vol. i. pl. xxvii. fig. 4. Of all the mollusks got by the Expedition, this is certainly the most valuable. It is large; the shell is singularly beautiful in form and colour; it comes from a great depth and an unknown sea; and its generic features are very peculiar. It is unfortunate that it is somewhat broken. In the act of its capture, or in the extraction of the animal, the shell must have been slightly crushed, and the fragments lost. To me it came most carefully packed in cotton-wadding; but one or two small pieces of shell were found loose in the box, and these I could replace. Under my care, however, in spite of the most extreme solicitude, it met with sore disaster, probably in landing from the continent, when the sailors handle luggage more roughly than even at Suez in days of old. The breaking was so bad that the shell looked like a wreck; the bits, however, were got into their places and fixed with cement, and some professional restorer may finish the work more delicately than I could do it. In any case this unique treasure is not lost.

4. *Volutomitra*, Gray, 1857.

Volutomitra fragillima, Watson (Pl. XIV. fig. 7).

Volutomitra fragillima, Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 334.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Shell.—Ovate-ventricose, thin, smooth, with a short spire, a long base, a large oblong mouth, and 4 teeth on the pillar. *Sculpture:* Longitudinals—there are many fine hair-like lines of growth. Spirals—there are very many broadish, but obsolete, rounded

threads; the front of the snout is obliquely crossed by about 15 stronger and more regular threads. *Colour* subpellucid white under a very thin yellowish smooth epidermis. *Spire* short and broad. *Apex* bluntly mamillate, not elevated, but rising a little on one side. *Whorls* nearly 6, convex, rounded above, sloping below. *Suture* a little impressed and strongly marked. *Mouth* oblong, somewhat oblique, rather large, pointed above, prolonged into a longish, open, truncated, but not emarginated canal. *Outer lip* thin, sharp, regularly curved, quite straight above, where it is slightly and widely hollowed back on the edge, prominent and patulous below, a little pinched in at the canal. *Inner lip* scarcely convex above, and very little concave at the base of the pillar, which is somewhat oblique and direct; there are four oblique, rather strong teeth, of which the two in the middle are the strongest; a very thin, narrow, definite-edged glaze extends down the edge of the mouth. H. 0·57 in. B. 0·3. Penultimate whorl, height 0·1. Mouth, height 0·39, breadth 0·12.

Without the animal it is, of course, not easy to distinguish between this form and *Admete*, but the apex is larger and the pillar-teeth stronger than they are in that genus. The generic features are well marked in this species, which, however, resembles no other known to me.

5. *Marginella*, Lamarck, 1799.

Species.

1. *Marginella fulminata*, Kiener.
2. *Marginella* (*Glabella*) *musica*, Hinds.
3. *Marginella* (*Glabella*) *turbinata*, Sow.
4. *Marginella* (*Glabella*) *pachia*, n. sp.
5. *Marginella* (*Glabella*) *agapeta*, n. sp.
6. *Marginella* (*Glabella*) *chrysea*, n. sp.
7. *Marginella* (*Glabella*) *valida*, n. sp.
8. *Marginella* (*Glabella*) *brachia*, n. sp.
9. *Marginella* (*Glabella*) *alta*, n. sp.
10. *Marginella* (*Glabella*) *elata*, n. sp.
11. *Marginella* (*Persicula*) *ovulum*, Sow.
12. *Marginella* (*Persicula*) *sagittata*, Hinds.
13. *Marginella* (*Gibberula*) *guancha*, D'Orb.
14. *Marginella* (*Gibberula*) *miliaria*, Linne.
15. *Marginella* (*Granula*) *agger*, n. sp.

1. *Marginella fulminata*, Kiener.

Marginella fulminata, Kiener, Iconog., p. 33, sp. 45, pl. xii. fig. 1.
„ „ Reeve, Conch. Icon., vol. xv. pl. xiii. fig. 54.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 67, sp. 85, pl. xii. figs. 10, 11.
„ „ Tryon, Manual, vol. v. p. 19, pl. v. fig. 78.

September 14–26, 1873. Bahia. 7 to 20 fathoms.

Habitat.—Brazil (Kiener).

2. *Marginella* (*Glabella*) *musica*, Hinds.

Marginella musica, Hinds, Proc. Zool. Soc. Lond., 1844, p. 73.
" " Sowerby, Thes. Conch., pt. 7, p. 379, sp. 23, pl. lxxv. figs. 36, 37.
" " Reeve, Conch. Icon., vol. xv. pl. ix. fig. 34.
" " Weinkauff, Conch. Cab. (ed. Küster), p. 52, sp. 65, pl. ix. figs. 13, 16.
" (*Glabella*) *musica*, Tryon, Manual, vol. v. p. 22, pl. vi. fig. 95.

Station VIII. February 12, 1873. Lat. 28° 3′ 15″ N., long. 17° 27′ W. Gomera, Canaries. 620 fathoms. Volcanic mud.

Station 142. December 18, 1873. Lat. 35° 4′ S., long. 18° 37′ E. Cape of Good Hope. 150 fathoms. Green sand. Bottom temperature 47°.

Habitat.—West Africa. 35 fathoms. Sand. (Hinds.)

The specimen from the Cape has the more elongated form of *Marginella diadochus*, Adams and Reeve, but if the species be really different the locality suits Hinds' species better than that of Adams and Reeve. Neither from the descriptions, however, nor from an examination of the shells, can I consider the species of Adams and Reeve as distinct, and Hinds' name has priority.

3. *Marginella* (*Glabella*) *turbinata*, Sowerby.

Marginella turbinata, Sowerby, Thes. Conch., pt. 7, p. 385, sp. 46, pl. lxxv. figs. 70, 71.
" " Reeve, Conch. Icon., vol. xv. pl. xxii. fig. 122.
" " Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 196, No. 60.
" " Weinkauff, Conch. Cab. (ed. Küster), 1879, p. 86, sp. 115, pl. xvi. figs. 9, 12.
" (*Glabella*) *turbinata*, Tryon, Manual, vol. v. p. 23, pl. vii. figs. 4, 5.

April 17, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
May 1864. Port Jackson, Sydney. 6 to 7 fathoms.

Habitat.—Port Jackson, Australia (Angas).

4. *Marginella* (*Glabella*) *pachia*,[1] n. sp. (Pl. XVI. fig. 5).

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Off Raine Island, Cape York, North-East Australia. 155 fathoms. Coral sand.

Shell.—Small, obovate, with scarcely any spire, strong, porcellanous white, lustrous, with an excessively narrow mouth, a truncate but not emarginate varixed toothless outer lip, and four small folds on the sharp-pointed pillar. *Sculpture:* None but faint lines of growth. *Colour* white, more or less translucent. *Spire* just perceptibly raised, but visible rather by colour than form, the suture being a little more opaque than the rest of the whorls. *Apex* minutely mamillate. *Whorls* 4, small, just perceptibly convex on the spire; the last is tumid, with a roundly conical and produced base. *Suture* barely

[1] παχύς, fat.

traceable, but still it is impressed, though very slightly so. *Mouth* long, narrow, a very little curved, with parallel lips. *Outer lip* rises as high as the apex; ascends slightly at its insertion, where it has a feeble bluntly angular sinus; in front it is obliquely truncate, but not emarginate; its forward edge is blunt and barely convex; there is a strong broad varix. *Inner lip* broadly thickened and spread out on the body, barely convex; about $\frac{2}{3}$ of its length are occupied by the folds, of which the highest is horizontal, the lower 3 are slightly stronger, are very oblique, and are recognisable across the pad of enamel which encircles the point of the base; the foremost one is too feeble to form a reverted flange round the tip of the pillar. H. 0·14 in. B. 0·11. Mouth, height 0·14, breadth 0·02.

This species slightly resembles *Marginella angasi*, Brazier, from Port Jackson; but is stumpier, with a smaller and more curved mouth, and 4 (not 1) pillar folds.

5. *Marginella* (*Glabella*) *agapeta*,[1] n. sp. (Pl. XVI. fig. 9).

Station 163B. June 3, 1874. Lat. 33° 51′ 15″ S., long. 151° 22′ 15″ E. Port Jackson, Sydney. 35 fathoms. Hard ground. Bottom temperature 63°.

Shell.—Gibbously oval, thin, translucent, lustrous, short-spired, small-mouthed, toothed on the outer lip, and with three folds on the pillar. *Sculpture:* There are slightly flexuous unequal lines of growth and excessively faint and minute microscopic spirals. *Colour:* the spire, lip-edge, and front of the shell are porcellanous white; but the body-whorl has a translucent ruddy brownish tinge. *Spire* short and broadly conical. *Apex* large, round, covered with a pad of enamel. *Whorls* 4, small. *Suture* buried in enamel, but quite distinct. *Mouth* long, narrow, curved, a very little broader in front than behind, with a rather deep, narrow, and angular sinus behind, and in front a narrowish, small, rounded, and oblique canal, formed by the truncation of the shell. *Outer lip* with no external callus, but thickened within and scored across there with small close numerous and rather long teeth, which are absent in the canal in front and in the bottom of the sinus behind; the truncation in front which produces the canal is slight, and almost perpendicular to the axis. *Inner lip* is almost straight, slightly thickened on the body, and has in front three slight, blunt, subequal, close-set, oblique folds, of which the foremost is continued as a reverted edge on the left of the canal. H. 0·3 in. B. 0·17. Mouth, height 0·24, greatest breadth 0·04.

This species is not unlike the *Marginella turbinata*, Sow.; but is less cylindrical, with a slightly higher spire, a decidedly narrower mouth, a toothed and unvarixed outer lip, and 3, not 4, teeth on the pillar. It is not any of those given by Angas in his Australian lists.

[1] ἀγαπητός, beloved.

6. *Marginella* (*Glabella*) *chrysea*,[1] n. sp. (Pl. XVI. fig. 8).

October 29–December 16, 1873. Sea Point, Cape Town.

Shell.—Elongately gibbously oval, thin, almost transparent, lustrous, of a rich ochry yellow, short-spired, small-mouthed, not truncate in front, with a smooth and varixed outer lip, and with 3 folds on the pillar. *Sculpture:* There are feeble lines of growth with here and there an indication of an old labral varix; one row of these varices nearly corresponds on successive whorls: under the microscope the whole texture of the shell seems formed of very minute and regular rods, crossed at right angles by equally minute spiral lines on the surface of the shell. *Colour* a rich, somewhat ochry yellow; not very lustrous. *Spire* rather short, conical, with a very slight amount of enamel, which in the suture is whitish, with a ruddy yellow thread shining through the shell from within. *Apex* blunt and flatly rounded. *Whorls* 5½, not small, slightly convex, the last long and narrow. *Suture* very distinct. *Mouth* long and narrow, broadening slightly at the pillar, barely truncate in front. *Outer lip* ascends at its insertion, has a slight varix with a sharp edge, which is straight in the middle and retreats above, forming a slight, shallow sinus; in front, too, it retreats, but not sufficiently so to emarginate the shell; there are no teeth within the lip. *Inner lip* not in the least thickened above or at the point, barely convex across the body; the folds on the pillar are 3, and are very oblique, the highest is very slight, the front one is the strongest, and forms a flange round the point of the pillar. H. 0·42 in. B. 0·2. Mouth, height 0·33, greatest breadth 0·07.

This species is found in the British Museum as an unnamed *Marginella* from Cape Town. It somewhat resembles *Marginella avena*, Val., but is shorter and broader, thinner in its shell, uniform in colour, not contracted in the middle of the body, and has 3, not 4, folds on the pillar. From *Marginella rufula*, Gask., a Cape species which it slightly resembles, it differs in form and colour and in having only 3 folds, not 4, on the pillar.

7. *Marginella* (*Glabella*) *valida*, n. sp. (Pl. XVI. fig. 3).

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Off Raine Island, Cape York, North-East Australia. 155 fathoms. Coral sand.

Shell.—Small, gibbously biconical, strong, porcellanous, lustrous white, with a long oblique, rather narrow mouth, a strongly varixed and feebly toothed outer lip, and four folds on the pillar. *Sculpture:* There are feeble unequal lines of growth. *Colour* porcellanous white, lustrous. *Spire* moderately raised, conical. *Apex* excessively blunt and rounded. *Whorls* nearly 5, slightly convex above, bluntly rounded at the periphery, produced and barely concave on the base. *Suture* slightly impressed. *Mouth* long,

[1] χρύσεος, gold-gleaming.

narrow and oblique; truncate in front. *Outer lip* not emarginate in front, though truncate; it ascends at the insertion, where is a wide shallow sinus; its front is convex in the middle; it has a strong varix and a blunt round edge, which is scored with the blunt very feeble teeth. *Inner lip* not at all thickened, nearly straight in direction, but oblique to the axis; nearly the whole lower half of its length is occupied by 4 broad, but not very prominent oblique teeth, the foremost of which forms a very slight flange to the pillar tip. H. 0·117 in. B. 0·075. Mouth, height 0·089, breadth 0·012.

8. *Marginella* (*Glabella*) *brachia*,[1] n. sp. (Pl. XVI. fig. 4).

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 145° 59′ 38″ E. Off Raine Island, Cape York, North-East Australia. 155 fathoms. Coral sand.

Shell.—Small, obovate, biconical, short-spired, strong, porcellanous white, lustrous, with a very narrow mouth, an unemarginate varixed and feebly toothed outer lip, and 4 strongish folds on the pillar. *Sculpture:* Faint growth lines. *Colour* lustrous, porcellanous white. *Spire* short, dumpy, conical. *Apex* extremely blunt and rounded, obscured by enamel. *Whorls* about 4, but they are very doubtfully distinguishable. *Suture* quite buried in enamel. *Mouth* oblique, very narrow. *Outer lip* ascends almost to the apex; has a deep rounded sinus above, and a deep oblique canal in front, where it is truncate but not emarginate; the front edge, which is very thick and feebly scored by the teeth, is almost level throughout, except of course just in front and behind; it is thickened outside by a strong broad varix. *Inner lip* thickened throughout, oblique and almost quite direct; of the 4 strong folds which occupy more than half its length, the highest is nearly horizontal; the others, which also increase in strength forwards, are very oblique; the last forms a flange round the point of the pillar, and is continuous with the labral varix. H. 0·11 in. B. 0·07. Mouth, height 0·1, breadth 0·01.

This species, compared to *Marginella valida*, has a much shorter spire, buried in enamel.

9. *Marginella* (*Glabella*) *alta*, n. sp. (Pl. XVI. fig. 2).

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Off Raine Island, Cape York, North-East Australia. 155 fathoms. Coral sand.

Shell.—Small, with a rather high spire, biconically oval, thinnish, porcellanous white, dullish, with a straightish but rather wide not emarginate mouth, weakly varixed feebly toothed outer lip, and 4 folds on the pillar. *Sculpture:* there are very slight

[1] βραχύς, short.

lines of growth. *Colour* dullish, somewhat opaque white. *Spire* high for the genus, conical, barely subscalar. *Apex* extremely blunt and rounded, with a large but inserted tip. *Whorls* 5, convex, the last oval, with a produced conical base. *Suture* very distinct, impressed. *Mouth* oblique, rather wide, scarcely truncate in front. *Outer lip* slightly ascending at its insertion, with a wide and very shallow sinus above, and a very slight canal in front, where it is not in the least emarginate; between these two points, its edge advances a little; it has a feeble, external varix, and a blunt, rounded edge, some way within which are 6 or 7 small tubercle-like unequal teeth, which do not extend to the upper part of it, and of which the highest is a little remote from the rest and larger than they. *Inner lip* quite thin, hardly concave, and for more than half its length occupied by the four strong pillar folds, of which the highest is (in the adult shell) horizontal, the others oblique; the last, which is continuous with the labral varix, forms a narrow but prominent flange round the point of the pillar. H. 0·15 in. B. 0·08. Mouth, height 0·1, greatest breadth, 0·03.

This is a larger, narrower, less gibbous shell than *Marginella valida*, Watson, with an entirely different mouth.

10. *Marginella* (*Glabella*) *elata*, n. sp. (Pl. XVI. fig. 7).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Small, high-spired and narrow, biconically oval, strongish, porcellanous white, dullish, with a narrow unemarginate mouth, a feebly varixed toothless outer lip, and 4 weak pillar folds. *Sculpture:* there are very slight lines of growth. *Colour* dull opaque white. *Spire* high for the genus, narrow, conical. *Apex* extremely blunt and rounded; somewhat obscured by a small pad of enamel. *Whorls* 5, flatly conical on the sides, the last is elongately oval, with a produced conical base. *Suture* barely traceable, and that only by colour. *Mouth* scarcely oblique, narrow above, a little less so in front. *Outer lip* hardly ascending at its insertion, with an extremely slight and narrow sinus above, and a broad shallow canal in front, where it is truncate, but not emarginate; the front edge (which is narrow, but blunt) of the lip hardly advances; outside there is a diffused and slight varix; within it is toothless. *Inner lip* quite unthickened, very slightly concave, and for more than half its length occupied by four narrow, but rather prominent equal folds, which twist round the point of the base, faintly marking the front of the shell; the furthest forward of them hardly forms a flange round the point of the pillar. H. 0·111 in. B. 0·055. Mouth, height 0·072, breadth 0·017.

This is a still higher, narrower, less gibbous shell than *Marginella alta*, and has no teeth on the outer lip.

11. *Marginella (Persicula) ovulum*, Sowerby.

Marginella ovulum, Sowerby, Thes. Conch., vol. i. pt. 7 p. 401, sp. 102, pl. lxxviii. fig. 188.
„ „ Reeve, Conch. Icon., vol. xv. pl. xxiii. fig. 129.
„ (*Cryptospira*) *ovulum*, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 196, No. 62.
„ *ovulum*, Weinkauff, Conch. Cab. (ed. Küster), p. 116, sp. 171, pl. xxii. fig. 4.
„ (*Persicula*) *ovulum*, Tryon, Manual, vol. v. p. 40, pl. xi. fig. 35.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 fathoms. Sand and shells.

April 17, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Port Jackson and Port Stephen, Australia (Angas).

12. *Marginella (Persicula) sagittata*, Hinds.

Marginella sagittata, Hinds, Proc. Zool. Soc. Lond., 1844, p. 76.
„ „ Sowerby, Thes. Conch., pt. 7, p. 393, sp. 78, pl. lxxviii. figs. 223, 224.
„ „ Reeve, Conch. Icon., vol. xv. pl. xv. fig. 70.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 57, sp. 73, pl. x. figs. 13, 16.
„ (*Persicula*) *sagitatta*, Tryon, Manual, vol. v. p. 39, pl. xi. fig. 31.

Station 113A. September 1, 1873. Lat. 3° 47′ S., long. 32° 24′ 30″ W. Anchorage off Fernando-Noronha. 7 to 25 fathoms. Volcanic sand and gravel.

Habitat.—Brazil (Hinds), Bahamas, Caribbean Sea, Australia (Tryon).

13. *Marginella (Gibberula) guancha*, D'Orbigny.

Marginella guancha, D'Orbigny in Webb and Berth., Moll. Canaries, p. 88, No. 125, pl. vi. figs. 32–34.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 131, sp. 202 (no fig.)
„ (*Persicula*) *guancha*, Tryon, Manual, vol. v. p. 41, pl. xi. fig. 42.

February 10, 1873. Tenerife. 70 fathoms.

Habitat.—Tenerife (D'Orbigny).

Weinkauff (*loc. cit. supra*, and p. 124, under *Marginella occulta*, Monterosato), indicates his disbelief in the difference between this and Monterosato's Mediterranean species, though why on that supposition he should figure *Marginella occulta* and not D'Orbigny's much older species is not obvious. They are really quite different. D'Orbigny's species I have from M'Andrew, and from my own dredgings, while the Marquis de Monterosato kindly sent me specimens of *Marginella occulta*. *Marginella guancha* (which is very badly figured in d'Orbigny) compared to the other, is much more tumid above, slightly angulated both above and below, with a certain straightness of profile between the two angulations. Even in the youngest shells there is a thickening of the inner lip which is entirely absent in *Marginella occulta*. The whole outer lip is much larger and stronger,

its callus being much fuller. This is markedly the case at the point of the shell, which in *Marginella occulta* forms a narrow sharp flange, very prominent and essentially connected with the front tooth, while in *Marginella guancha*, though much thickened, it is much less prominent, does not form a flange, nor is connected specially with the front tooth, which is small and inconspicuous.

Of course, being toothed on the outer lip, this species is not a Gibberula, but I leave it there where the Messrs Adams have put it.

14. *Marginella* (*Gibberula*) *miliaria* (Linne).

Voluta miliaria, Linné, Syst. Nat., 12th ed., p. 1189, No. 402.
Volvaria miliacea, Lamarck, Anim. s. vert., vol. vii. p. 364, and (ed. Desh.) vol. x. p. 461, sp. 5.
„ „ Payraudeau, Moll. Corse, p. 168, No. 337, pl. viii. figs. 28, 29.
„ „ Kiener, p. 19, sp. 26, pl. vi. fig. 26.
„ „ Philippi, Enum. Moll. Sicil., vol. i. p. 232, vol. ii. p. 197, sp. 2.
Voluta miliaria, Hanley, Ipsa Linn. Conch., pp. 217, 515.
Marginella miliacea, Hörnæs, Foss. Moll. d. Wien. Beckens, vol. i. p. 84, pl. ix. figs. 1, 2.
„ *miliaria*, Weinkauff, Conch. Mittelmeer., vol. ii. p. 20, sp. 1.
„ „ Monterosato, Enumerazione, p. 48.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 120, No. 179, pl. xxiii. figs. 1, 2.

February 10, 1873. Tenerife; Canaries. 70 fathoms.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 fathoms. Volcanic mud.

Habitat.—Mediterranean (Phil.), Madeira (Watson).

Fossil from the Miocene onwards (Hörnæs).

I have not quoted above Adanson's *Le Stipon* (Sénégal, p. 79, pl. v. fig. 4), though, in spite of Deshayes (Anim. s. vert., 2d ed., vol. x. p. 481, note), I am inclined to think Kiener was right in identifying his species with the one we are considering—nor Wood (Ind. Test., p. 100, pl. xix. fig. 52), who, according to Hanley (Ind. Test., 2d ed.), presents *Marginella lactea*, Kiener—nor Sowerby (Thes. Conch., pt. 7, p. 399, sp. 95, pl. lxxviii. figs. 227–230), whose species is not that of Linne—nor Reeve (Conch. Icon., vol. xv. pl. xxvii. fig. 154), whose species is *Marginella guancha*, D'Orb.—nor Tryon (Manual, vol. v. p. 42, pl. xi. figs. 47, 48), who confuses Mediterranean and Red Sea species. Hörnæs I have quoted with doubt. His figures and description are very little like the Mediterranean species, but Weinkauff (Conch. Mittelm., vol. ii. p. 20) says he has seen the Miocene fossils of which Hörnæs speaks, and satisfied himself of their identity with the living form.

15. *Marginella* (*Granula*) *agger*,[1] n. sp. (Pl. XVI. fig. 6).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

[1] The name is given with a reference to the rampart-like callus which encompasses the mouth behind.

Shell.—Very small, strong, white, rounded, narrowed in front, broad and gibbous behind, where also the labral callus, somewhat pinched out, and prominent especially on the right, encircles the top of the mouth, which is much bent and narrow, channelled in front and behind, and runs the whole length of the shell; the outer lip is varixed and inside is finely toothed, the inner lip is bent, unthickened, and has three very feeble teeth in front. *Sculpture:* none, but some very faint lines of growth. *Colour* translucent white. *Spire* entirely concealed. *Mouth* is small, much bent, the full length of the shell, a very little expanded behind, very slightly narrowed in the middle, but nearly of the same breadth throughout. *Outer lip* thick, curved, but less so above than in front, where it is oblique in direction; in the middle it is slightly incurved and is blunt, but above and below is bevelled outwards to a sharp edge, the inner side of which is furrowed with small fine teeth; it is thickened externally by a narrowish, slightly prominent labral varix, which is continued, a little weakened but with a small exterior furrow, round the outside of the posterior canal, which is deep and rounded, and truncates the tip of the shell. *Inner lip* very much bent, particularly above; at the top it is shortly, thickly, and angularly bordered by the end of the callus of the outer lip, which coils round the top of the shell; in front there is an almost imperceptible thickening where the teeth occur; these are four in number and very small, the upper two being barely visible; the lower two are very oblique, and the under one of these forms a minute flange to the point of the pillar, which is very truncated. H. 0·082 in. B. 0·055. Mouth, breadth 0·007, greatest breadth (at the top) 0·012.

This little species resembles, of course, a considerable number of small Marginellas, of which there is a large group, only distinguishable from one another by careful examination of specimens. So obvious a fact as this need not have been stated, but for the almost incredible tendency to mix up a number of these species on the mere testimony of figures and descriptions. *Marginella agger* differs from *Marginella guancha*, d'Orb., in that the shell is rounder, the tumidity of the body is less gibbous, the mouth is more prolonged behind, and the tip of the shell in front is less truncated, the teeth on the outer lip are a little stronger, and those on the pillar a little weaker than in that species. Compared to *Marginella clandestina*, Brocchi, *Marginella agger* is rounder in form, being less broad behind, but is more pointed at both ends, behind especially; the presence of the little projections formed by the labral varix is a marked feature; there, too, the canal is deeper, the pillar teeth, too, are much finer and feebler. From *Marginella occulta*, Monterosato, it differs markedly in form, being smaller, shorter, and rounder, the posterior enlargement of the labral varix is much more prominent, and the posterior oral canal is much deeper; it lacks, too, the slight basal excavation which is always found in that species. *Marginella ovuliformis*, d'Orb., from Cuba, has a much shorter mouth, and lacks the posterior projection.

Family CANCELLARIIDÆ, Gray, 1857.

Genus *Cancellaria*, Lamarck, 1799.

Species.

1. *Cancellaria spengleriana*, Desh.
2. *Cancellaria undulata*, Sow.
3. *Cancellaria imbricata*, Wats.
4. *Cancellaria* (*Admete*) *specularis*, Wats.
5. *Cancellaria* (*Admete*) *carinata*, Wats.

1. *Cancellaria spengleriana*, Deshayes.

Cancellaria spengleriana, Deshayes, Encycl. méthod., vol. ii. p. 185, sp. 14.
" " Kiener, Iconog., p. 23, sp. 16, pl. xiv. fig. 1.
" *tritonis*, Sowerby, Conch. Illust., p. 2, sp. 14, fig. 15.
" *spengleriana*, Sowerby, Thes. Conch., vol. ii. pt. 9, p. 439, sp. 2, pl. xciii. fig. 29.
" " Reeve, Conch. Icon., vol. x. pl. iii. fig. 11.
" " Lamarck (ed. Desh.), vol. ix. p. 415, No. 21.
" " Debeaux, Malac. Chinoise, Journ. de conch., vol. xi. (1863), pp. 246, 263, No. 10.
" " Lischke, Japan. Meer. Conch., vol. ii. p. 55.
" " Dunker, Index Moll. Mar. Jap., p. 103.
" " Tryon, Manual, vol. vii. p. 67, pl. i. figs. 2, 3.

Station 233. May 17–19, 1875. Lat. 34° 39′ N., long. 135° 14′ E. Kobi, Japan. 8 fathoms. Mud.

Habitat.—Philippines (Reeve), China (Debeaux), Japan (Lischke).

2. *Cancellaria undulata*, Sowerby.

Cancellaria undulata, Sowerby, Proc. Zool. Soc. Lond., 1848, p. 136, sp. 9.
" " Sowerby, Thes. Conch., vol. ii. pt. 9, p. 443, sp. 16, pl. xcii. fig. 12, pl. xcv. fig. 79.
" " Reeve, Conch. Icon., vol. x. pl. iii. fig. 9.
" " Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 171, No. 93.
" *spengeriana*, var. Tryon, Manual, vol. vii. p. 67, pl. i. figs. 4, 5.

May 1874. Port Jackson, Sydney. 6 to 7 fathoms.

Habitat.—Tasmania (Reeve), Van Diemen's Land and Philippines (Sowerby), South Australia (Angas), South and East Australia (Dr Cox of Sydney).

This is a young specimen, but valuable, for though not fully grown it exhibits the uninjured apex, which is not often found.

3. *Cancellaria imbricata*, Watson (Pl. XVIII. fig. 10).

Cancellaria imbricata, Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 325.

Station 142. December 18, 1873. Lat. 35° 4′ S., long. 18° 37′ E. Off Cape of Good Hope. 150 fathoms. Green sand. Bottom temperature 47°.

Shell.—Oval, with a smallish, high, subscalar, blunt spire, a semicircular mouth, and a rough spirally striated surface; yellowish white. *Sculpture:* Longitudinals—on the upper whorls there are some slight rather distant ribs, which pass over on the later whorls into rough imbricated appressed laminæ covering the whole surface. Spirals—there are flatly rounded threads parted by intervals of twice their breadth; below the suture 2 are feeble, 4 in the middle are strong, 5 on the base are narrow and sparse, and 5 to 6 on the snout are slight and close: besides these, there are minute spirals and lines of growth which reticulate crisply the whole surface. *Colour* porcellanous white, beneath a yellowish surface, which is quite stripped of epidermis. *Spire* high, rather small, conical, subscalar. *Apex* blunt and globose, consisting of $1\frac{3}{4}$ rounded embryonic whorls, of which the extreme tip is very much depressed on one side. *Whorls* 5 in all, well rounded, the earlier small and of slow increase, the last large, with a short base and a small snout. *Suture* impressed. *Mouth* rather large, semicircular. *Outer lip* regularly rounded and open, strongly seamed within by the spirals of the surface. *Inner lip:* a very thin glaze spreads broadly over the body, but narrows and thickens on the small hollowed and twisted pillar, leaving a very minute chink in front; there are below the middle of the pillar two strongish, very oblique white teeth; and the twisted edge of the pillar is prominent and sharp. H. 0·8 in. B. 0·5. Penultimate whorl, height 0·16. Mouth, height 0·46, breadth 0·3.

The specimen of this species is perhaps not quite full-grown. The whole aspect of the shell suggests an *Admete;* but the teeth on the pillar are stronger than is usual in that group. It is much shorter in the spire, broader in the whorls, and more delicately sculptured than *Cancellaria turrita*, Sow.

4. *Cancellaria* (*Admete*) *specularis*, Watson (Pl. XVIII. fig. 11).

Cancellaria (*Admete*) *specularis*, Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 325.

Station 149B. January 17, 1874. Lat. 49° 28′ S., long. 70° 30′ E. Near entrance of Royal Sound, Kerguelen. 25 fathoms. Volcanic mud.

Station 151. February 7, 1874. Lat. 52° 59′ 30″ S., long. 73° 33′ 30″ E. Off Heard Island. 75 fathoms. Volcanic mud.

Shell.—Small, ovate, striated, with a shortish, scalar, blunt-tipped apex, a rounded base, very small snout, and semicircular mouth. *Sculpture:* Longitudinals—there are strongish numerous hair-like lines of growth. Spirals—below the suture is a shoulder marked by an angulation carrying a thread; the shoulder is indistinctly scored with spiral

threads; from the angulation to the snout there are several well-marked threads parted by shallow broader furrows; toward the point of the snout is a twisted scar. The whole surface is scored by fine, almost microscopic lines. *Colour* porcellanous white under the thin dirtyish yellow epidermis. *Spire* rather short and broad, conical, scalar. *Apex* blunt, round, a little bent in at the tip. *Whorls* $5\frac{1}{2}$, rounded, slightly angulated near the top, with a slight shoulder above the angle, of rather regular increase; the last has a somewhat produced base and a very small snout. *Suture* impressed. *Mouth* rather large, semicircular. *Outer lip* regularly rounded and open; seamed within by the spirals of the surface. *Inner lip* well defined, narrow, having a talc-like iridescence,[1] very straight on the pillar, on the front of which the glaze turns sharply over to the inner side, and leaves there a very slight chink in front: at the point of the pillar the edge is twisted and is bluntly prominent, and above this are one or two faint folds. H. 0·45 in. B. 0·27. Penultimate whorl, height 0·1. Mouth, height 0·22, breadth 0·16.

In form this species resembles *Admete viridula*, Fabr. = *couthouyi*, Jay, of the British Museum; but that species has not the talc-like inner lip, is not so well shouldered, nor is the shoulder defined by a spiral thread, and the spirals in general are much stronger; the body-whorl is larger, more tumid, and more contracted on the base. Dr Kobelt very kindly copied out and sent me the diagnoses of two species of *Cancellaria* from the Straits of Magellan, with which he thought I might wish to compare this of the Challenger. These are *Cancellaria* (*Admete*) *australis*, Philippi, and *Cancellaria* (*Admete*) *Schythei*, Phil. I have not, I think, seen either of these; but they both seem to be very much more strongly ribbed and spiralled than the present or following species. One of the specimens from Kerguelen contains the animal; but I failed to extract it, and only ascertained that there was no operculum. In this specimen the folds on the pillar-lip are more distinct than on the Heard Island specimen.

There is an *Admete* from Station 149C, Balfour Bay, Royal Sound, Kerguelen, 60 fathoms, which is too much broken for identification, but which is probably this species.

5. *Cancellaria* (*Admete*) *carinata*, Watson (Pl. XVIII. fig. 9).

Cancellaria (*Admete*) *carinata*, Watson, Prelim. Report, pt. 12, Journ. Linn. Soc. Lond., vol. xvi. p. 327.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Shell.—Broadly ovate, carinate, spiralled, with a very short, blunt, scalar spire. *Sculpture:* Longitudinals—there are only fine, sharp, unequal puckerings on the lines of growth. Spirals—a sharp flanged keel lies about the middle of the whorls; above this is the horizontal, slightly concave shoulder, on which are no spirals; below the keel the whole surface is scored with fine prominent rounded unequal threads, parted by broader intervals; those on the snout are feeble. *Colour* white. *Spire* very short and depressed,

[1] From this feature I have derived the name of the species.

but rising in broad shallow steps. *Apex* small, raised. *Whorls* 5, flattened or even slightly concave above, strongly keeled and angulated in the middle, of regular increase; the last is very large and ventricose, with an elongated but convex base, and a very small snout. *Suture* impressed, very horizontal. *Mouth* fully half the size of the shell, oval, angulated at the keel and at the base of the pillar. *Outer lip* rounded and open, advancing a little in front of the point of the pillar. *Inner lip* thinly spread on the body, with a small chink in front behind the pillar, the edge of which is narrow and twisted, with two indistinct folds above it. H. 0·4 in. B. 0·28. Penultimate whorl, height 0·07. Mouth, height 0·3, breadth 0·17.

I failed to extract the animal from the shell; but plainly it had no operculum. The extreme bluntness and tabulation of the spire give a very peculiar aspect to this species.

Family PLEUROTOMACEA,[1] Lovén, 1847.

Genera. 1. *Pleurotoma*,[2] Lam. 2. *Clathurella*, Carp. 3. *Borsonia*, Bellardi. 4. *Clionella*, Gray.

1. *Pleurotoma*,[3] Lamarck, 1799.

Species.

1. *Pleurotoma marmorata*, Lam.
2. *Pleurotoma monilifera*, Pease.
3. *Pleurotoma speciosa*, Reeve.
4. *Pleurotoma tigrina*, Lam.
5. *Pleurotoma undosa*, Lam.
6. *Pleurotoma ischna*, Wats.
7. *Pleurotoma spicea*, Wats.
8. *Pleurotoma xanthophaës*, Wats.
9. *Pleurotoma phymatias*, Wats.
10. *Pleurotoma* (*Surcula*) *brevicaudata*, Reeve.
11. *Pleurotoma* (*Surcula*) *deshaysii*, Doûmet.
12. *Pleurotoma* (*Surcula*) *leucotropis*, Ad. and Reeve.
13. *Pleurotoma* (*Surcula*) *oxytropis*, Sow.
14. *Pleurotoma* (*Surcula*) *tuberculata*, Gray.
15. *Pleurotoma* (*Surcula*) *staminea*, Wats.
16. *Pleurotoma* (*Surcula*) *trilix*, Wats.
17. *Pleurotoma* (*Surcula*) *lepta*, Wats.
18. *Pleurotoma* (*Surcula*) *rotundata*, Wats.
19. *Pleurotoma* (*Surcula*) *goniodes*, Wats.
20. *Pleurotoma* (*Surcula*) *plebeia*, Wats.
21. *Pleurotoma* (*Surcula*) *syngenes*, Wats.
22. *Pleurotoma* (*Surcula*) *hemimeres*, Wats.
23. *Pleurotoma* (*Surcula*) *anteridion*, Wats.
24. *Pleurotoma* (*Surcula*) *bolbodes*, Wats.
25. *Pleurotoma* (*Surcula*) *gypsata*, Wats.
26. *Pleurotoma* (*Surcula*) *dissimilis*, n. sp.
27. *Pleurotoma* (*Genota*) *didyma*, Wats.

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[1] As a name for the family Pleurotomaceæ was published by Hinds (Voyage of the "Sulphur," p. 15, 1844), but entirely without definition.

[2] *Turris* of Humphrey, 1797, adopted by Adams (Genera, vol. i. p. 87), is *Turritella*. *Turris* of Bolten, 1798, is *Pleurotoma*, but is only a catalogue name.

[3] I regret that the very valuable work of Bellardi on the tertiary molluscs of Piedmont, of which vol. ii., 1877, contains 674 species of *Pleurotoma*, did not come into my hands till so late a period as made any thorough comparison of his Piedmontese fossils with any of the living species from the Atlantic basin impossible, and yet it is obvious that such a comparison is absolutely needed. A freer interchange of the publications of learned societies at home and abroad, of which the American Government gives so admirable an example, would greatly facilitate such work.

28. *Pleurotoma* (*Genota*) *engonia*, Wats.
29. *Pleurotoma* (*Genota*) *atractoïdes*, Wats.
30. *Pleurotoma* (*Drillia*) *laterculata*, Sow.
31. *Pleurotoma* (*Drillia*) *incrassata*, Dujardin.
32. *Pleurotoma* (*Drillia*) *latisinuata*, E. A. Sm.
33. *Pleurotoma* (*Drillia*) *metcalfei*, Angas.
34. *Pleurotoma* (*Drillia*) *quoyi*, Desmoulins.
35. *Pleurotoma* (*Drillia*) *incilis*, Wats.
36. *Pleurotoma* (*Drillia*) *sterrha*, Wats.
37. *Pleurotoma* (*Drillia*) *climacota*, Wats.
38. *Pleurotoma* (*Drillia*) *horrenda*, n. sp.
39. *Pleurotoma* (*Drillia*) *kymatoëssa*, n. sp.
40. *Pleurotoma* (*Drillia*) *spadix*, n. sp.
41. *Pleurotoma* (*Rhaphitoma*) *rhysa*, Wats.
42. *Pleurotoma* (*Crassispira*) *owenii*, Gray.
43. *Pleurotoma* (*Bela*) *ula*, Wats.
44. *Pleurotoma* (*Bela*) *phœacra*, Wats.
45. *Pleurotoma* (*Bela*) *dyscrita*, Wats.
46. *Pleurotoma* (*Bela*) *climakis*, n. sp.
47. *Pleurotoma* (*Typhlomangelia*) *pyrrha*, Wats.
48. *Pleurotoma* (*Typhlomangelia*) *paupera*, Wats.
49. *Pleurotoma* (*Typhlomangelia*) *fluctuosa*, Wats.
50. *Pleurotoma* (*Typhlomangelia*) *lithocolleta*, Wats.
51. *Pleurotoma* (*Typhlomangelia*) *lincta*, Wats.
52. *Pleurotoma* (*Spirotropis*) *studeriana*, v. Mart.
53. *Pleurotoma* (*Spirotropis*) *aganactica*, n. sp.
54. *Pleurotoma* (*Spirotropis*) *brachytona*, Wats.
55. *Pleurotoma* (*Spirotropis*) *bulbacea*, Wats.
56. *Pleurotoma* (*Spirotropis*) *stirophora*, Wats.
57. *Pleurotoma* (*Spirotropis*) *tmeta*, Wats.
58. *Pleurotoma* (*Perrona*) *marmarina*, Wats.
59. *Pleurotoma* (*Thesbia*) *eritima*, Wats.
60. *Pleurotoma* (*Thesbia*) *translucida*, Wats.
61. *Pleurotoma* (*Thesbia*) *corpulenta*, Wats.
62. *Pleurotoma* (*Thesbia*) *platamodes*, Wats.
63. *Pleurotoma* (*Thesbia*) *membranacea*, n. sp.
64. *Pleurotoma* (*Thesbia*) *xanthias*, n. sp.
65. *Pleurotoma* (*Pleurotomella*) *brychia*, Wats.
66. *Pleurotoma* (*Pleurotomella*) *pruina*, Wats.
67. *Pleurotoma* (*Pleurotomella*) *papyracea*, Wats.
68. *Pleurotoma* (*Mangelia*) *nitens*, Hinds.
69. *Pleurotoma* (*Mangelia*) *subtilis*, Wats.
70. *Pleurotoma* (*Mangelia*) *levukensis*, Wats.
71. *Pleurotoma* (*Mangelia*) *eritmeta*, Wats.
72. *Pleurotoma* (*Mangelia*) *hypsela*, Wats.
73. *Pleurotoma* (*Mangelia*) *acanthodes*, Wats.
74. *Pleurotoma* (*Mangelia*) *corallina*, Wats.
75. *Pleurotoma* (*Mangelia*) *macra*, Wats.
76. *Pleurotoma* (*Mangelia*) *incincta*, Wats.
77. *Pleurotoma* (*Mangelia*) *tiara*, Wats.

1. *Pleurotoma marmorata*, Lamarck.

Chemnitz, Conch. Cab., vol. iv. p. 186, pl. cxlv. figs. 1345, 1346.
Pleurotoma marmorata, Lamarck, Anim. s. vert., vol. vii. p. 95, and (ed. Desh.) vol. ix. p. 352, sp. 19.
" " Schubert and Wagner, Conch. Cab., vol. xii. p. 154, pl. ccxxxiv. figs. 4101, 4102.
" " Kiener, Iconog., p. 9, sp. 5, pl. vi. fig. 1 (pl. vii. fig. 2, excl.)
" " Gray, Zool. Beechey's Voyage, p. 119, pl. xxxiv. fig. 9.
" " Reeve, Conch. Icon., vol. i. pl. iii. fig. 21, and (*Pleurotoma hastula*), pl. xvii. fig. 139.
" " Weinkauff, Conch. Cab. (ed. Küster), p. 16, sp. 9, pl. iii. fig. 4.
" " Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. ii. p. 368.
" " Dunker, Index Moll. Mar. Jap., p. 20.
" " Tryon, Manual, vol. vi. p. 165, pl. ii. figs. 16, 16a, 17.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Station 187. September 9, 1874. Lat. 10′ 36° S., long. 141′ 55° E. Near Cape York, North Australia. 6 fathoms. Coral mud.

Station 208. January 17, 1875. Lat. 11′ 37° N., long. 123′ 31° E. Philippines. 18 fathoms. Blue mud.

Habitat.—North-East Australia and Torres Strait (Brazier), Philippines, Moluccas, China, and Australia (Shuttleworth Collection, Bern Museum).

I have no doubt that the specimen entered above as from Levuka, Fiji, is the same as *Pleurotoma picta*, Beck (Mus. Reg. Dan. MS.), in the British Museum. Whether the British Museum is right in this, and what are the relations of these two species, I am not able to say. Brazier's union of *Pleurotoma marmorata* and *Pleurotoma tigrina* (see Brazier, *loc. cit. supra*) is not, I imagine, a deliberate and independent estimate, but a reflection, perhaps unconscious, of Bory de St. Vincent (see Encycl. méthod., explanation of plates in vol. i. under pl. ccccxxxix. fig. 6).

2. *Pleurotoma monilifera* (Pease).

Turris monilifera, Pease, Proc. Zool. Soc. Lond., 1860, p. 398.
„ „ Pease, Amer. Journ. of Conch., 1870, vol. v. p. 68.
Pleurotoma (*Gemmula*) *monilifera*, Weinkauff, Conch. Cab. (ed. Küster), p. 73, pl. xv. figs. 7, 9.
„ „ „ Weinkauff, Jahrb. deutsch. malak. Gesellsch. 1875, p. 289, pl. ix. figs. 1, 3.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Hawaii, Oahu in Sandwich Islands (Pease).

Compared with *Pleurotoma speciosa*, Reeve, *Pleurotoma monilifera*, Pease, is of smaller growth, has a shorter canal, is different in colour, and lacks the canaliculated suture. It has besides fewer bars in the scar of the labral sinus, and rarer spirals. The point, however, of greatest difference is the apex, which in *Pleurotoma monilifera* is minuter and more finely sculptured, and there, too, the bars on the third and fourth whorls are not cusps, as in Reeve's species, but flexuous ribs. Than *Pleurotoma gemmata*, Hinds, with which Tryon (Manual, vol. vi. p. 173) unites Pease's species, *Pleurotoma monilifera* is a shorter, broader, coarser shell, and the sculpture is different.

3. *Pleurotoma speciosa*, Reeve.

Pleurotoma carinata (not of Bivona), Gray, Griffith's Anim. Kingdom, 1834, vol. xii. pp. 80 and 599, pl. xxii. figs. 1, 2.
„ *speciosa*, Reeve, Conch. Icon., vol. i. pl. ii. fig. 9, and (*Pleurotoma carinata*) pl. vii. fig. 56.
„ (*Gemmula*) *speciosa*, Weinkauff, Jahrb. deutsch. malak. Gesellsch., 1875, p. 289, sp. 2, pl. ix. fig. 7.
„ „ „ Weinkauff, Conch. Cab. (ed. Küster), p. 72, pl. xv. fig. 5.

Station 190. September 12, 1874. Lat. 8° 56′ S., long. 136° 5′ E. Arafura Sea. 49 fathoms. Green mud.

Habitat.—China and Hong-Kong.

I identified this shell with the species exhibited in the British Museum under the name *Pleurotoma carinata*, Gray, and which bears, marked on the back of the tablet, *Pleurotoma speciosa*, Reeve. This note on Gray's type-specimen indicates that the two are there regarded as one species. This idea Reeve (*loc. cit.*, sp. 56, *Pleurotoma carinata*, Gray) says he had once entertained, but abandoned; having still further come to believe that *Pleurotoma carinata*, Gray, is the same as *Pleurotoma kieneri*, Doûmet (published in 1840, Mag. de Zool., pl. x.) Reeve thus gives species 9, *Pleurotoma speciosa*, Reeve, and species 56, *Pleurotoma carinata*, Gray (Griff.), *Pleurotoma kieneri*, Doûmet. Weinkauff (Monog. Pleurot. in Küster) simply follows Reeve, slightly improving his figures and enlarging the

letterpress, both of which he still further improved in the Jahrb. deutsch. malak. Gesellsch., which, though (*teste* the title-pages) earlier by four years, really followed the part of the Conch. Cab. containing these species.

Apart from such questions regarding the specific identity of these forms lies a further difficulty, viz., by what name the species must be called. The name *carinatum* had been already, in 1832 (two years before Gray used it), attached by Bivona to a fossil *Pleurotoma* from Calabria (Biv., fil. Gener. and sp. posthum., p. 12; see Phil., Enum., vol. ii. p. 176, pl. xxvi. fig. 19), and the English Crag (Searles Wood, Crag Moll., Pal. Soc., vol. i. p. 54, pl. vi. fig. 2) now living in Scotland (Jeffreys, Brit. Conch., vol. v. p. 321, pl. cii. fig. 7), and in Norway (G. O. Sars, Moll. Reg. Arct. Norv., p. 242, pl. xvii. fig. 5). Gray's name of *carinatum* for the Pacific species must, therefore, be abandoned. Mr. E. A. Smith informs me that this Pacific species is probably the same as that which Gray afterwards described in the Zoology of Beechey's Voyage, 1839, p. 119, under the name of *Pleurotoma coniformis*. It would be very satisfactory if this could be established, but in the meantime Reeve's name is probably the best, and I have accordingly adopted it here.

4. *Pleurotoma tigrina*, Lamarck.

Pleurotoma tigrina, Lamarck, Anim. s. vert., vol. vii. p. 95, and (ed. Desh.) vol. ix. p. 352, sp. 20.
" " Deshayes, Encycl. méthod., vers., vol. iii. p. 794, sp. 7, pl. ccccxxxix. fig. 6.
" " Kiener, Iconog., p. 10, sp. 6, pl. viii. fig. 1.
" " Reeve, Conch. Icon., vol. i. pl. i. fig. 3.
" " Gould, U.S. Expl. Exped., p. 249, pl. xviii. fig. 311.
" " Weinkauff, Conch. Cab. (ed. Küster), p. 13, sp. 5, pl. ii. figs. 5–7.
" " Brazier, "Chevert" Exped., Proc. Linn. Soc. New South Wales, vol. ii. p. 368.
" " v. Martens, Moll. Mauritius, &c., p. 226.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—North-East Australia and Torres Strait (Brazier), Ticao, Philippines (Reeve), Fiji (British Museum), Indian Ocean, from Madagascar to the Malay Archipelago (v. Martens).

Gould's figure and description of the animal of this species is so very different from the received generic diagnosis, say of Adams or Weinkauff, still more of Gray in his Guide, pp. 7, 8, as grievously to shake one's confidence in the whole of the so-called "science" of malacology, based as it largely is on specimens much changed from their original form by the spirit of wine in which they have been preserved.

5. *Pleurotoma undosa*, Lamarck.

Pleurotoma undosa, Lamarck, Anim. s. vert., vol. vii. p. 95, and (ed. Desh.) vol. ix. p. 351, sp. 18.
" " Encycl. méthod., vers., pl. ccccxxxix. fig. 5.
" " Kiener, Iconog., p. 13, sp. 9, pl. iii. fig. 2.
" " Reeve, Conch. Icon., vol. i. pl. iii. fig. 18.
" " Weinkauff, Conch. Cab. (ed. Küster), p. 18, sp. 11, pl. iii. figs. 7, 8.
" " Tryon, Manual, vol. vi. p. 166, pl. iii. fig. 21.

September 9, 1874. Albany Island, Cape York, Torres Strait. 3 to 12 fathoms.

Habitat.—China (Shuttleworth Collection, Bern Museum), Philippines (Reeve), Pondicherry (Kiener), Timor (Weinkauff), Red Sea (Jickeli).

Deshayes (*loc. cit. supra*) rejects Kiener's identification (see the Iconographie, *loc. cit. supra*) of this species altogether, apparently on very good grounds. Weinkauff (in Conch. Cab., *loc. cit. supra*) seems satisfied with Kiener's figure as really representing Lamarck's species, but he himself apparently figures some other species. As to Reeve's figure (*loc. cit.*), it is impossible to say what he meant to represent, and Tryon merely copies his figure. I have simply quoted these different authors for what they may be worth.

6. *Pleurotoma ischna*,[1] Watson (Pl. XXII. fig. 2).

Pleurotoma ischna, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 403.

Station 169. July 10, 1874. Lat. 37° 34′ S., long. 179° 22′ E. N.E. from New Zealand. 700 fathoms. Blue mud. Bottom temperature 40°.

Shell.—High, narrow, conical, blunt, with a contracted base and longish snout, little sculpture, strongish, yellowish grey, porcellanous. *Sculpture:* Longitudinals—there are only strongish unequal lines of growth,[2] which rise into small tubercles, especially on the upper whorls; between the stronger lines the surface of the shell is delicately fretted with other very minute sharp lines. Spirals—the whorls are faintly keeled above the middle by a spiral thread, which is a little stronger and more prominent than any of the others. Close above the suture is another almost as strong, and which also slightly carinates the whorls; half-way between these is a finer thread, which tends to split into two very fine threads; at the suture, but visible beyond the mouth, is another thread, which here defines the base. The longitudinals rise into very small tubercles as they cross the spirals; but this feature is much stronger on the upper whorls, which are reticulated; on the last whorl it is feeble. Between the keel and the superior suture lie three very fine, equally parted, threads. On the base and snout are about twelve pretty equal fine threads. *Colour* a faintly yellowish grey. *Epidermis* extremely thin, smooth. *Spire* conical, with an almost unbroken profile, the whorls being scarcely convex. *Apex*—there are barely two embryonic whorls, smooth, globose, not flattened down at the tip, which, however, is slightly immersed. *Whorls* 7 in all, feebly keeled with a just perceptibly concave line from the suture to the keel, and from the keel to the suture below. Just above the suture there is a slight contraction, which forms a faint superior margination. The last whorl is very slightly swollen; the base is rather rapidly contracted, and is drawn out into a rather long, straight, but not narrow snout. *Suture* distinct, impressed. *Mouth* almost club-shaped, being pointedly oval above, with a longish rather sinuous canal below. *Outer lip* forms a regular curve, till at the canal it becomes flattened and

[1] ἰσχνός, lean.

[2] These are much too strong, too remote, and too straight in the figure, which is besides too broad and too angular, and does not sufficiently show the furrowed suture.

oblique; from the body it retreats at once to form the rather deep, rounded, open-mouthed sinus, from which it advances on a very straight line to the edge of the canal in front, where it bends slowly and slightly backwards; it is throughout open, but not patulous, except at the point of the canal. *Inner lip* spreads as a narrow porcellanous glaze on the body and pillar; it is slightly hollowed out on the body, is straight on the pillar, toward the front of which it is cut off with a narrow, rounded, and very slightly oblique edge. H. 0·34 in. B. 0·09. Penultimate whorl, height 0·05. Mouth, height 0·14, breadth 0·05.

This species is very like *Pleurotoma emendata*, Monterosato (= *Pleurotoma renieri*, Phil., but not really that of Scacchi), but is much narrower, has much finer and differently arranged spirals, which are minutely tubercled, the curved cusps of the old sinuses are much feebler, and the longitudinals between the threads are far less distinct. The apical whorls are much less depressed.

7. *Pleurotoma spicea*, Watson (Pl. XXII. fig. 4).

Pleurotoma spicea, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 419.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Short and broad, biconical, scalar, angulated, without ribs, but with tubercles at the angle, and feeble spiral threads[1] on the base; the snout is small and lop-sided. *Sculpture:* Longitudinals—there are none but very fine, unequal, hair-like lines of growth. Spirals—immediately below the suture is a minute collar of very small, high, round, remote tubercles, whose sutural surface at right angles to the axis is perfectly flat; this collar is strongest on the earlier whorls; below this is a sloping, flat, or slightly concave shoulder. A little above the middle of the whorls is a rectangular angulation beset with small, remote, slightly elongated, sharpish tubercles, which give the appearance of a sharply expressed keel; of these tubercles there are about twenty-seven on the last whorl; but they diminish rapidly up the spire. The base of the last whorl is defined by a small rounded thread, which forms a feeble keel; it lies quite below the origin of the outer lip. A little remotely below it lie two or three others, rather weaker, but prominent, widely parted, rounded threads, with four or five similar ones on the snout, of which the last one or two are stronger than the others. *Colour* polished porcellanous white. *Spire* scalar and stumpily conical, with its profile-lines much interrupted by the constriction of the sutures. *Apex* consists of two embryonic whorls; it is large and dome-shaped, having the extreme tip quite immersed and the suture almost suppressed. *Whorls* 5½ in all (but the specimen is immature); they are short and broad, of rather rapid increase, with a broad horizontal shoulder and a sharp carinated angle, below which they are cylindrical, with a slight contraction to the lower suture; the last is broadest at the keel, a little con-

[1] These are not shown in the figure.

tracted below this point, tumid on the base, drawn in at the pillar, with a small, short, sharp-pointed snout. *Suture* very strong and distinct, from the concave curve of the whorl above it and the horizontal tabulation of the collar below. *Mouth* largish, angularly pear-shaped. *Outer lip* thin, angulated, straight and horizontal above, convex and patulous below the angle, drawn in at the snout; it retreats at once on leaving the body to form the rather deep, narrow, rounded sinus which occupies the shoulder, but whose apex occurs at the carina; below this it descends very little, but runs out into a very convex curved edge, whose prominence is greatly increased by the rapidity and extent of the retreat of the lip-edge at the snout. *Inner lip* is narrowly excavated in the substance of the shell on the body and down the pillar; it has a convex contour across the body, at the junction of which and the pillar is a strong but rounded angle; the pillar is short, strong, conical, obliquely truncated in front, with a sharp, rounded, twisted edge. H. 0·25 in. B. 0·16. Penultimate whorl, height 0·04. Mouth, height 0·14, breadth 0·09.

The largest specimen of this species seems somewhat immature. I have called it simply a *Pleurotoma*, because its sinus occurs at the peripheral keel, but its apex is not that of a simple *Pleurotoma*.

8. *Pleurotoma xanthophaës*,[1] n. sp. (Pl. XXVI. fig. 1).

Station 163B. June 3, 1874. Lat. 33° 51′ 15″ S., long. 151° 22′ 15″ E. Port Jackson, Sydney. 30 to 35 fathoms. Hard ground.

Shell.—High, narrow, fusiform, subscalar, bicarinated, tubercled, fulvous, with brown specks between the carinal tubercles. *Sculpture:* Longitudinals—there are rough lines of growth. Spirals—the whole surface is covered with very unequal threads; immediately below the suture is a broadish thread, puckered by the lines of growth; below this on the shoulder of the shell there are 3 feeble threads rather widely and quite shallowly parted; the corner of the shoulder has a strongish rounded keel cut into white blunt tubercles, between which are chestnut spots; below this keel is a broad and somewhat constricted furrow in which are some (3 to 6) feeble threads; the lower side of the furrow is formed by another keel also tubercled and speckled, but weaker than the upper keel. Between these two keels the shell is cylindrical; from this point it begins to contract, has one feeble thread, then plainly within the base 2 strongish threads, which are subtubercled; below this on the front of the base and on the pillar are about 10 threads; the point of the pillar has no threads, but is very rough. *Colour* fulvous, with whitish and chestnut specks; the point of the snout is white. *Spire* high, narrow, conical, slopingly scalar. *Apex* coronated (?); it is somewhat rubbed, but seems to consist of 3 to 4 whorls. *Whorls* 7, exclusive of those of the apex; they are bicarinated, constricted above and

[1] ξανθοφαής, with a chestnut gleam, the colour between the tubercles.

below, of slow and regular increase; the last is small, with a rounded elongated base and a small somewhat longish snout. *Suture* strongly marked by the constriction above it, and marginated by the puckered thread below. *Mouth* club-shaped. *Outer lip* thin, with a sinus strong rather than deep, V-shaped, extending from the suture, and having its apex at the keel. *Inner lip* thin, concave above, then direct, and then at the canal strongly cut off to the left, and having a slight twist on its edge. H. 0·92 in. B. 0·3. Penultimate whorl, height 0·14. Mouth, height 0·44, breadth 0·16.

I do not know anything that this is very like. Perhaps in form it may be said to resemble a little *Pleurotoma fusca*, Homb. and Jacq., but the sculpture is quite different.

9. *Pleurotoma phymatias*,[1] n. sp. (Pl. XXVI. fig. 2).

Station 205. November 13, 1874. Lat. 16° 42′ N., long. 119° 22′ E. Philippines. 1050 fathoms. Blue mud. Bottom temperature 37°.

Shell.—Rather high and narrow, thin, white, angulated and tubercled on the angle, spiralled, with a short round base, small snout, and openly constricted suture. *Sculpture:* Longitudinals—there are only harsh, irregular, unequal lines of growth. Spirals—the shell is rather broadly carinated in the middle of the whorls by three fine threads, which are united and made prominent by a series of narrow elongated tubercles—this is where the apex of the sinus occurs; the whole base and snout are scored with feeble threads, one of which, about half-way down the base, is a little more prominent than the rest; the shoulder of the shell above the keel has also some spiral threads, of which the one nearest the suture is also studded with small tubercles. *Colour* greyish yellow. *Spire* high, conical; its profile lines are cut into zigzags by the projecting keels of the successive whorls and the contracted sutures between. *Apex* broken. *Whorls* $5\frac{1}{4}$ alone remain; they are of slow increase, are biconical, contracting (with a straight outline) from the keel into the suture both above and below; the last is short, with a slightly tumid rounded base contracting into a small equal-sided snout. *Suture* very distinct, being contracted, impressed, and sub-marginated below; it is little oblique. *Mouth* pear-shaped; sharply pointed above and below. *Outer lip* very thin, with a very deep open U-shaped sinus, which is separated from the suture by a large broad triangular shelf; the edge of the shell sweeps very far forward from the sinus and then advances straight down the canal. *Inner lip* has a thin glaze on the body; its line is concave above, then straight down the pillar, the point of which is cut off to the left and very much twisted at the point, leaving the short narrow oblique canal very open. H. 0·81 in. B. 0·37. Penultimate whorl, height 0·14. Breadth of first remaining whorl, 0·11. Mouth, height 0·37, breadth 0·19.

[1] φυματίας, one who has tubercles.

10. *Pleurotoma* (*Surcula*) *brevicaudata*, Reeve.

Pleurotoma brevicaudata, Reeve, Proc. Zool. Soc. Lond., 1843, p. 186.
„ „ Reeve, Conch. Icon., vol. i. pl. xv. fig. 126.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 68, sp. 76, pl. xiv. figs. 5, 6.
„ (*Surcula*) *brevicaudata*, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 152.
„ *fascialis* (young), Tryon, Manual, vol. vi. p. 169, pl. iv. fig. 45.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Torres Strait, North Australia (Brazier).

11. *Pleurotoma* (*Surcula*) *deshaysii*, Doûmet.

Pleurotoma deshaysii, Doûmet, Magazin de Zool., Moll., 1840, pl. xi.
„ „ Reeve, Conch. Icon., vol. i. pl. iii. fig. 19 (?)
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 26, sp. 23, pl. v. fig. 7.
„ *indica*, Tryon, Manual, vol. vi. p. 168, pl. vi. fig. 80.

Station 204B. November 2, 1874. Lat. 12° 46′ N., long. 122° 10′ E. Off Manila. 100 to 115 fathoms. Green mud.

Habitat.—China (Doûmet).

Doûmet's is a very beautiful figure, but perhaps of a specimen not fully grown. Does Reeve's figure really represent this species? It is not like it. Weinkauff's figure in the Conch. Cab. is very unlike *both* the other figures cited above. Reeve and Weinkauff erroneously ascribe Doûmet's publication of the species to the year 1834.

12. *Pleurotoma* (*Surcula*) *leucotropis*, Adams and Reeve.

Pleurotoma leucotropis, Adams and Reeve, Voy. "Samarang," p. 40, pl. x. fig. 7.
„ *oxytropis* (not of Sowerby), Eydoux and Souleyet, Voy. "Bonite," vol. ii. p. 620, pl. xliv. figs. 9, 10.
„ *leucotropis*, E. A. Smith, Ann. and Mag. Nat. Hist., 1875, ser. 4, vol. xvi. p. 416, No. 9.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 28, pl. vi. fig. 3.
„ *oxytropis*, Tryon, Manual, vol. vi. p. 168, pl. iv. fig. 37.

Arafura Sea, without date or special locality.

Habitat.—China (Adams and Reeve), Cochin-China (Eydoux and Souleyet), Matoza Harbour and Oosima Harbour, Japan (E. A. Sm.)

There has been a considerable inclination shown by several writers to unite this species and *Pleurotoma oxytropis*, Sow. No one is likely to do this who has true specimens of both species before him. They are very unmistakably different.

13. *Pleurotoma (Surcula) oxytropis*, Sowerby, var. *albicarinata*, Sowerby.

Pleurotoma oxytropis, Sowerby, Proc. Zool. Soc. Lond., 1833, p. 135, and (var. *albicarinata*) 1870, p. 253.
" " Reeve, Conch. Icon., vol. i. pl. iii. fig. 17.
" *nobilis*, Hinds, Proc. Zool. Soc. Lond., 1843, p. 37.
" " Hinds, Voy. "Sulphur," p. 15, pl. vi. fig. 12.
" *oxytropis*, Carpenter, Brit. Assoc. Report, Moll. N.W. Coast N. America, 1856, p. 330.
" " (?) Weinkauff, Conch. Cab. (ed. Küster), p. 27, pl. vi. fig. 12.
" " Tryon, Manual, vol. vi. p. 168, pl. iv. figs. 38, 39.

Station 321. February 25, 1876. Lat. 35° 2′ S., long. 55° 15′ W. Monte Video. 13 fathoms. Mud.

Habitat.—Panama, 13 to 20 fathoms (Sowerby); West Mexico (British Museum, Hinds, and Carpenter).

This is not the *Pleurotoma oxytropis* of Eydoux and Souleyet (see Voy. "Bonite," 1852, vol. ii. p. 620, No. 219, from Cochin-China, which is *Pleurotoma leucotropis*, Adams and Reeve).

A mark of interrogation to the quotation from Weinkauff (*ut supra*) is inevitable. His index and explanation of plates not being yet issued, I am in doubt regarding his figures, which quite certainly do not represent the same species.

I am not aware of this species having previously been found on the east coast of America. Weinkauff's attribution of it to Saigun arises probably from Eydoux and Souleyet's erroneous identification, to which reference is made above.

14. *Pleurotoma (Surcula) tuberculata*, Gray.

Pleurotoma tuberculata, Gray, Zool. Beechey's Voyage, p. 120 (without figure).
" " Reeve, Conch. Icon., vol. i. pl. ix. fig. 72.
" (*Surcula*) *tuberculata*, Weinkauff, Conch. Cab. (ed. Küster) p. 40, sp. 39, pl. ix. figs. 1, 3.
" *tuberculata*, Dunker, Index Moll. Mar. Japon., p. 20.
Surcula tuberculata, Tryon, Manual, vol. vi. p. 237, pl. v. fig. 67.

Arafura Sea (without date or special locality).
Between Stations 205 and 206. Off Hong-Kong. 10 fathoms.

Habitat.—Japan, China, Saigun, Java (Weinkauff).

Weinkauff (*loc. cit.*) says that this species has 10 whorls—the Challenger specimen has 14 in all. The embryonic apex which does not seem to have been described is small, rounded, globose, buff-coloured, and has the extreme tip a little bent over and immersed. It consists of 2 whorls, of which the second is more than usually high. I add the measurements I have made of the shell: they differ somewhat from those in the Conch. Cab. Weinkauff gives H. 29 mm. B. 10 mm. Mouth, height, including canal, 20 mm. Instead of these I make them, H. 1·24 in. (=32·5 mm.), B. 0·44 in. (=12 mm.) Mouth, height 0·65 in. (=17 mm.), breadth 0·23 in. (=6 mm.)

15. *Pleurotoma* (*Surcula*) *staminea*, Watson (Pl. XX. fig. 3).

Pleurotoma (*Surcula*) *staminea*, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 388.

Station 146. December 29, 1873. Lat. 46° 46′ S., long. 45° 31′ E. Off Marion and Prince Edward Islands. 1375 fathoms. Globigerina ooze. Bottom temperature 35°·6.

Station 149J. January 29, 1874. Lat. 48° 43′ S., long. 69° 15′ E. Off Cumberland Bay, Kerguelen. 105 fathoms. Volcanic mud.

Shell.—High, narrow, biconically fusiform, scalar, carinated, with spiral threads, thin, white. *Sculpture:* Longitudinals—the shell is scored with coarse irregular sinuous lines of growth, but there is no trace of any other longitudinal markings. Spirals—above the middle of each whorl is a strong carination only slightly projecting, but marked by the angulation of the whorl and by the prominence of the thread on its crest. On the body-whorl there is a tendency to a second carination, which runs into the mouth just below the junction of the outer lip, and is thus concealed on all the earlier whorls (it is evident that this inferior angulation is a feature which varies much in different individuals). Besides these, the whole surface is covered with irregular and unequal threads; these are feeblest on the sloping shoulder below the suture; close below the upper keel and on the snout and its conical base they are fine; about 4 above and 2 below the lower keel are the strongest, but they all tend to subdivide themselves; and the whole shell is scored by irregular and somewhat broken microscopic lines. *Colour* translucent white under a thin, pale, greyish-yellow epidermis, which adheres closely, but is apt to rub through. *Spire* is high, narrow, conical, and slopingly scalar in consequence of the drooping shoulder between the suture and the keel. *Apex* is more or less eroded in all the four specimens: it consists of not more than $1\frac{1}{4}$ embryonic whorls, which are globose, smooth, and with the point a little obliquely pressed down. *Whorls* $8\frac{1}{2}$, rather short except the last, of regular increase, angulated above the middle; the shoulder between the suture and the keel is straight-lined. From the keel the whorls are slightly contracted to the inferior suture, and the profile-line here is scarcely convex. The last whorl is feebly tumid below the keel, and is drawn out from a produced conical base into a long, narrow, cylindrical, very slightly upturned snout, which projects on the right side of the base. *Suture* a fine, sharp, slightly irregular line, well defined by the contraction of the whorl above and the straight line of the shoulder on the whorl below. *Mouth* club-shaped, being oval above, and prolonged below into a long, but not very narrow, canal, which is a little sinuous, and widens towards its end in consequence of the oblique cutting away of the pillar-lip. *Outer lip*, which is thin, sharp, and patulous, leaves the body at a right angle and advances quite straight to the keel, above which lies the deep, thin-lipped, U-shaped sinus, whose lower margin runs parallel to, but a little above, the carinal thread; from the keel the lip-edge advances with a long, free, forward curve and

a sinuous double sweep, first convex and then concave, to the point of the snout, where the edge is prominent, rounded, and patulous. *Inner lip* almost hyaline, being cut into the substance of the body-whorl, but not extending beyond the mouth-edge; it is slightly concave above, straight in the middle, and very early and obliquely cut away in front from which point, for the sixth of an inch, it advances to the extreme point of the shell as a delicate, thin, sharp lamina bordering the canal. The operculum seems to have been broken, probably in the attempt to extract it; but it is obviously small, thin, and pale yellow. H. 1·6 in. B. 0·51. Penultimate whorl, height 0·24. Mouth, total height, 0·83, breadth 0·28.

The animal of this species is preserved in one specimen, that from Station 146; it is deeply retracted, and is of a pale buff colour.

The name I have selected is descriptive of the sculpture of the shell.

Surcula is not a satisfactory group in which to place this species, but the great length of its canal excludes it from *Spirotropis*, which the general style of the shell suggests as its place.

16. *Pleurotoma* (*Surcula*) *trilix*, Watson (Pl. XXV. fig. 5).

Pleurotoma (*Surcula*) *trilix*, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 390.

Station 150. February 2, 1874. Lat. 52° 4′ S., long. 71° 22′ E. Between Kerguelen and Heard Island. 150 fathoms. Coarse gravel. Bottom temperature 35°·2.

Shell.—High, very narrow, biconically fusiform, subscalar, bicarinated, strong, white. *Sculpture:* Longitudinals—there are very many unequal, strong, harsh, flexuous lines of growth, of which one every here and there is stronger than the rest. Spirals—there are two keels, of which the upper and stronger lies a little above the middle of the whorls, is sharply pinched out, but has a rounded edge; there is a drooping, but straight-lined shoulder above, and the whorl is somewhat contracted below it, so that it has considerable prominence; the lower keel is a rounded, rather prominent thread, which is the more conspicuous from the contraction of the whorl below it into the suture; between these two keels, more or less in the middle, lies a thread more marked than any of the others which, coarse, unequal, and interrupted, closely cover the whole surface; of these two or three in the line of the sinus on the shoulder, between the upper keel and the suture, are somewhat stronger, more regular, and swollen than the rest; while just below this point, where the lines marking the lower edge of the sinus run, the surface is almost free of spiral threads. *Colour* porcellanous white. *Epidermis* extremely thin, smooth, pale yellowish. *Spire* high, narrow, subscalar. *Apex* consists of 1¼ embryonic whorls, globose, smooth, and somewhat obliquely pressed down on one side at the extreme tip. *Whorls* 7½, narrow, angulated, with a straight drooping shoulder below the suture, slightly concave between the keels, contracted into the lower suture; the base is conical,

and projects on the right side into a long, narrow, and very slightly twisted snout. *Suture* a fine, sharp, deeply impressed line. *Mouth* club-shaped, being oval above, with a sharpish angulation at the upper point, and being produced into a long, rather narrow, but slightly widening canal, which is open in consequence of the oblique cutting away of the pillar-lip. *Outer lip*, which is thin, sharp, and patulous, with a slight contraction on the edge of the canal, leaves the body nearly at a right angle, and advances with a very slight convexity to the keel, above which lies the deep, thin-lipped, U-shaped sinus, whose lower margin lies parallel to, but a little above, the carinal thread; from the keel the lip has an edge which on the front is first convex and then very slightly receding, while on the side it is first convex and then concave to the point of the snout, where its course is very straight. *Inner lip* a thin, porcellanous glaze, spreads a little on the body, from which the spirals are slightly cut away; the lip is a little concave above, then straight, and is early and obliquely cut away on the front of the pillar, where it is slightly prominent, and finally it runs out to the point of the snout as a thin edge bordering the canal. H. 1·47 in. B. 0·48. Penultimate whorl, height 0·24. Mouth, total height 0·8, breadth 0·26.

This species extremely resembles *Pleurotoma staminea;* nor should I be at all surprised if, on a fuller series of specimens being obtained, the two species should be ultimately united; but the four specimens of the former and the three of the present species obtained by the Challenger are constant to one another and easily distinguishable. Besides distinctions which stand out in the description, the form in *Pleurotoma trilix* is slimmer, as if the whorls were more closely twisted; the snout is longer, finer, a little twisted, and is striated to the point; the shell is stronger, the pillar-edge of the front canal where obliquely cut off is a little more contracted; the suture is much more deeply impressed, the apex is a very little larger, and very slightly more pressed down on one side. The sculpture, too, is crisper, sharper, and smaller in the spirals, so as to produce a markedly different texture. In *Pleurotoma staminea*, where an inferior keel faintly appears, it lies much lower than in *Pleurotoma trilix*, in which it lies markedly above the suture.

Like *Pleurotoma staminea*, this species is by the length of its canal excluded from the *Spirotropis* group.

17. *Pleurotoma* (*Surcula*) *lepta*, Watson (Pl. XVIII. fig. 7).

Pleurotoma (*Surcula*) *lepta*, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 391.

Station 157. March 3, 1874. Lat. 53° 55′ S., long. 108° 35′ E. Southern Ocean, south-west of Australia. 1950 fathoms. Diatom ooze. Bottom temperature 32·1°.

Shell.—High, fusiform, rather tumid, conical, with a produced base and a very long fragile snout, thin, white, with very little sculpture. *Sculpture:* Longitudinals—the whole surface is closely scored with fine striæ in the lines of growth; of these, at irregular intervals of about $\frac{1}{100}$ inch apart or rather more, one rises into greater strength and prominence as a rounded thread; these are stronger and more regular on the earlier

whorls than on the last. Spirals—two-thirds down the whorls is a blunt angulation bearing 4 or 5 fine, close-set, rounded threads; on the last whorl the angulation is obsolete, but its place is defined by the group of close-set threads; on the rounded shoulder above these are microscopic striæ and very indefinite rounded threads; below the angulation are 5 or 6 pretty prominent, unequal, narrow, remote, rounded threads; the one which comes out from the suture at the upper angle of the mouth, and which defines the base, is somewhat stronger than those above it, and this one is succeeded on the base by a series of others, similar, but more remote, with occasionally a finer one between; on the base they become feebler, less regular, and, on the whole, more remote; the surface of the shell between these is faintly scored microscopically. *Colour* porcellanous white and semi-transparent, from the thinness of the shell. *Epidermis* an excessively thin, pale yellow, smooth membrane, which is very easily rubbed off. *Spire* high and conical, and yet almost globose from the rapid increase of the rounded whorls; its profile-lines are much interrupted by the sutural contractions. *Apex* consists of $1\frac{1}{2}$ embryonic whorls, and is small, rounded, mamillary, prominent, but a little flattened down on one side. *Whorls* 6, of very rapid increase, the last particularly so; they are very tumid and well rounded, with only a slight angulation, above which is a long convex shoulder, while below it the whorl contracts very slightly; the last is very large, being not only tumid, but having an elongated base which, though considerably hollowed out on the left side, is very little narrowed on the right, and is produced into a long, conical, largish snout, which projects almost entirely on the right side of the axis. *Suture* rather broad and deeply sunken, and almost a little canaliculated. *Mouth* long, large, club-shaped, being oval and bluntly pointed above, and having a long, rather narrow, and open canal below. *Outer lip* very sharp and thin, a little contracted except along the canal, where it is slightly patulous; the curve of the lip, which is very steep above, passes over, by a slightly flattened arch and a concave curve below, to a straight line along the canal; its edge, on leaving the body, retreats rather rapidly to the left, forming the deep semi-circular sinus which occupies the whole shoulder from the suture to the angulation; the lower edge of the sinus is very low-shouldered, but advances very prominently below, and retreats no more till it reaches the extreme point of the shell. *Inner lip* is hollowed rather broadly out of the shell-wall, the edge of which rises sharply, but very thinly, outside; it spreads across the whole of the rather short and early truncated pillar, which has a long, oblique, rounded, and slightly twisted edge, and which above joins the body with a very slightly concave curve. *Operculum* pale yellow, thin, oval, broadly rounded in front where the nucleus lies, pointed behind, rather finely roundedly striate in the loop-lines of growth, which are crowded, not on the pillar edge, but on that lying toward the outer lip of the shell. The body of the animal is a pale buff colour, but cannot be extracted without sacrificing the shell. H. 1·6 in. B. 0·65. Penultimate whorl, height 0·27. Mouth, height 0·1, breadth 0·43.

This singularly beautiful species has some resemblance to *Pleurotoma clara*, v. Mart. (*nec* Reeve), from Patagonia, 60 fathoms, and is, like that and those previously described here, eminently characteristic of frigid waters. It wants the carination of that species, has a longer and more inflated body-whorl, with a smaller and shorter apex, a more contracted suture, and stronger spiral threads.

18. *Pleurotoma* (*Surcula*) *rotundata*, Watson (Pl. XXI. fig. 6).

Pleurotoma (*Surcula*) *rotundata*, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 393.

Station 246. July 2, 1875. Lat. 36° 10′ N., long. 178° 0′ E. Mid Pacific, east of Japan. 2050 fathoms. Globigerina ooze. Bottom temperature 35·1°.

Shell.—High, narrow, fusiform, conical, with rounded whorls and a shallow suture, below which the inferior whorl swells out tumidly; the last whorl is short and rounded, with a constricted conical base and a long narrow snout. *Sculpture:* Longitudinals—there are strongish, close-set, rounded, hair-like lines of growth, specially strong below the suture. Spirals—over the whole surface are strong, but unequal, rather distant, sharpish threads; those in the sutural area are, with two or three exceptions, weaker than those elsewhere; about three at the periphery are somewhat prominent. *Colour* porcelain-white under a thin yellow epidermis. *Suture* fine, superficial, but well defined. *Mouth* is club-shaped, being oval, with a long narrow canal below and a blunt angulation above. *Outer lip* very evenly curved, but a little more steeply above than below; it is drawn out into a long straight line along the side of the canal; the edge-line, on leaving the body, retreats very straight toward the left to the rather remote, wide, and openly rounded, but very deep sinus, between which and the body-whorl lies an acute triangular shelf, while below is the very high shouldered and prominent lip. *Inner lip* is exceptionally narrow, but strong and marginated; it is very little concave at the junction of the body and the pillar, which is long, narrow, and is cut off at the point with a long, little oblique, sharp, and scarcely twisted edge. H. (?) 1·65 in. B. 0·6. Penultimate whorl, height 0·22. Mouth, height 0·9, breadth 0·3.

This is a species of interest, both from its habitat and from the simplicity of its rounded whorls and of its sculpture. It exists unfortunately in the form of a mere fragment. It is a good deal like *Pleurotoma planctica*, Edw., from the Eocene Bracklesham beds (see Eocene Moll., Palæont. Soc., p. 212, pl. xxvi. fig. 3), but has not the flatly constricted band below the suture, which in that species throws the whorls out in a high rounded shoulder. In *Pleurotoma rostrata*, Edw. (*loc. cit.*, p. 218, pl. xxvi. fig. 8), though with less of a shoulder, there is a broader constricted belt, and there are traces of longitudinal ribs.

19. *Pleurotoma* (*Surcula*) *goniodes*,[1] Watson (Pl. XX. fig. 5).

Pleurotoma (*Surcula*) *goniodes*, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 394.

Station 320. February 14, 1876. Lat. 37° 17′ S., long. 53° .52′ W. South-east of the Rio de la Plata. 600 fathoms. Green sand. Bottom temperature 37·2°.

Shell.—High, narrow, biconical, subscalar, with a long, unconstricted base and a subequal-sided snout, angulated, with an expressed keel, and with regular fine spiral threads all over. *Sculpture:* Longitudinals—there are only fine, regular, close, hair-like lines of growth. Spirals—in the middle of each whorl is a strong angulation formed by the straight drooping line of the shoulder and the straight contracting line down to the inferior suture; the angulation is pinched out into a sharp round-edged keel; there are fine sharpish threads on the whole surface pretty equally distributed and of equal strength; of these there are on the penultimate whorl below the keel about 6; they are parted by flat broadish intervals, strongly scored with the lines of growth. *Colour* white under a yellow epidermis. *Spire* high, narrow, conical, with profile-lines interrupted by the straight-lined contraction of the shell between the keels of the successive whorls. *Apex* (eroded) small and rounded. *Whorls* 6–7; their profile consists of two straight lines meeting in the keel which bisects the whorls; above is a slowly sloping shoulder, and below a gradual contraction to the suture; the last whorl is scarcely convex on the conical base, which contracts with great regularity to the long, nearly equal-sided snout. *Suture* fine, linear, but well defined. *Mouth* club-shaped, being rhomboidal above, with a long narrow canal below. *Outer lip* high-arched and then straight along the canal; its edge retreats at once to the left, and forms a remote, deep, rounded sinus in the shoulder above the keel; below this it sweeps out into a high and prominent shoulder. *Inner lip* little concave at the junction of the body and pillar, which is straight above, but towards the point is obliquely cut off with a long, narrow, twisted edge, and bends a good deal to the left. H. 0·9 in. B. 0·38. Penultimate whorl, height 0·16. Mouth, height 0·51, breadth 0·22.

This is a stumpier form than *Pleurotoma leucotropis*, Adams and Reeve, with a more conical and less constricted base, and shorter and more bent snout. From *Pleurotoma oxytropis*, Sow., while differing, of course, still more markedly in most of these points, it differs yet more in sculpture. Though a much smaller and narrower form and with a more conical and less tumid base, it is in a general way very like *Pleurotoma circinata*, Dall; but that is destitute of the spiral sculpture on the shoulder, which seems also to be the case with *Pleurotoma kennicottii*, Dall, a smaller form than *Pleurotoma circinata*, and which is also distinguished by a double keel on the last whorl.

[1] γωνιώδης, angular.

20. *Pleurotoma* (*Surcula*) *plebeia*, Watson (Pl. XXV. fig. 2).

Pleurotoma (*Surcula*) *plebeia*, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 395.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—High, narrow, fusiform, subscalar, angulated and tubercled on the angle, strong, rough, yellowish white. *Sculpture:* Longitudinals—the upper whorls are nearly bisected by a bluntish angulation, which is made more marked by about 20 small, oblique, longitudinally elongated knobs, of which scarcely a trace appears below or above the keel; they become fewer up the spire and die out on the last whorl; there are very many, rough, very unequal, curved lines of growth. The whole surface is covered by coarse, unequal, and very irregular threads, varying in their direction, and interrupted by the longitudinal lines of growth; these threads are most equal in the infra-sutural tract, where the line of the old sinus-markings lie; below the keel they occur alternatingly as stronger and finer; on the base and snout they are coarse, but almost disappear on the point; they and the suture are exceptionally independent of one another. *Colour* yellowish porcellanous white. *Spire* high, narrow, conical, and slopingly subscalar. *Apex* broken. *Whorls* probably 9–10, rather narrow, somewhat hollowed on the shoulder below the suture; below the keel their profile-line is straight, but contracted to the suture below. The base (whose upper limit is defined by a very slight angulation) is conical, drawn out pretty much in the axial line into a long, narrowish, cylindrical, strong, and slightly reverted snout. *Suture* a rather minute, sharp, somewhat irregular line, which does not at all follow the spiral markings, but crosses these up and down in an unusually irregular manner; it is well defined by the concave hollow formed by the contraction of the whorls above and below it. *Mouth* club-shaped, being somewhat angularly ovate above (with a sharpish point at the top and an angulation at the keel), and prolonged below into the somewhat oblique open canal, which is kept open by the oblique cutting away of the pillar. *Outer lip* sharp, but strong; it leaves the body at an acute angle and retreats towards the right to form the sinus, which is open and near but not immediately at the body: from the sinus the lip-edge advances with a strong forward convexity to the point of the canal; laterally it is also rather convex, but is contracted into the snout, along the edge of which it is pretty straight with a somewhat oblique direction towards the left, and here it is patulous. *Inner lip* porcellanous, smooth, narrow, cut off, and slightly twisted in front, and running out at the point to a sharp edge along the canal, the point of which is then rounded and patulous. H. 1·5 in. B. 0·5. Penultimate whorl, height 0·23. Mouth, total length 0·7, breadth 0·23.

In this species the generic sinus lies high and is open, which reduces to rather small dimensions the little testaceous shelf which forms its upper edge and separates it from the body-whorl; but the

sinus does not, as in *Clathurella*, lie quite at the upper angle of the mouth. The shell has some resemblance to *Pleurotoma nodifera*, Lam., from China and the Philippines; but in that species the body-whorl is much more tumid, the canal is much longer and is more bent to the left, the apex is more uninterruptedly conical, the suture is deeper, the spiral threads are not so universal, and are in their course regular. In texture this species is very much like *Pleurotoma* (*Typhlomangelia*) *nivalis*, Lovén, but the length of its snout excludes it from the *Typhlomangelia* group.

21. *Pleurotoma* (*Surcula*) *syngenes*,[1] Watson (Pl. XX. fig. 2).

Pleurotoma (*Surcula*) *syngenes*, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 396.

Station 23. March 15, 1873. Lat. 18° 24′ N., long. 63° 28′ W. Off Sombrero Island, West Indies. 450 fathoms. Pteropod ooze.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Long, narrow, biconically fusiform, sharply carinated and tubercled on the keel, polished, thin, white. *Sculpture:* Longitudinals—there are very many, fine, close-set, slightly raised flexuous lines of growth. Spirals—there is a sharp keel which lies about $\frac{2}{3}$ down the whorls; it is very prominent from the concavity of the whorl above and below; the sharpness of this keel is due not so much to its crest, which is rounded, but to its being beset by prominent round, conical, pointed tubercles, of which there are about 15 on the penultimate whorl; on the upper whorls these are fewer, but they begin at once on the first whorl below the embryonic shell; on the last whorl they disappear entirely toward the mouth. Besides the carina, there are many delicate lines; three or four of these, very fine, smooth, and flat, come in below the suture; at about $\frac{1}{50}$ inch below the suture is a fine, sharp, engraved line; about 6 more of these, but less strong, come in above the keel. Below the keel the sculpture is somewhat similar, but less distinct and less regular. On the snout the interstices rise into rounded, slightly roughened threads, which on the extreme point become feebler. *Colour* ivory-white. *Spire* high, narrow, conical, but with the profile-lines broken by the deep concave curves at the sutures. *Apex*, the $2\frac{1}{2}$ embryonic whorls are small, cylindrical, and bluntly rounded at the top, which is slightly pressed down on one side. *Whorls* $11\frac{1}{2}$, strongly angulated, with a concave curve between the keels; they are rather narrow and of very slow increase: the last one is a little tumid, with a very regular convex curve, which contracts evenly to a long, projecting, narrow, cylindrical snout, lying very nearly in the axis of the shell. *Suture* a very faint, delicate, and regular line, well defined by the concavity of the whorl both above and below it. *Mouth* club-shaped, but long and narrow, sharply pointed above, and very much twisted in consequence of the great depth and width of the sinus. *Outer lip:* originating markedly below the keel, it leaves the body at a very acute angle; its

[1] συγγενής, allied.

edge, which is sharp throughout, retreats at once, forming a very narrow and short ledge between the body-whorl and the sinus, which is rounded and open, and whose depth is due entirely to the great forward sweep of the lip below, where it projects like the pinion of a wing and is slightly patulous; it curves in laterally to the origin of the canal, and then advances very straight and scarcely patulous to the rounded point of the shell. *Inner lip* is slightly cut out of the substance of the shell, is very narrow and very straight, the cutting away of the point of the pillar being very gradual and very slightly oblique. H. 1·13 in. B. 0·33. Penultimate whorl, height 0·12. Mouth, total height 0·58, breadth 0·16.

The tubercled angulation of this species recalls faintly a similar feature in *Pleurotoma nivalis*, Lov., Norway and Britain, and *Pleurotoma plebeia*, Wats. It is slightly like *Pleurotoma unifasciata*, Sow., from West Columbia, but is much longer in the canal. It is very near to *Pleurotoma dimidiata*, Broc. (a sub-Apennine Miocene species), of which there are specimens (perhaps the *Pleurotoma powerii*, Calcara, which Labassi holds to be a variety of *Pleurotoma dimidiata*) as slim as the Challenger species; but in Brocchi's species the keel is sharper and persists to the mouth-edge; on the same length of shell it has two whorls less; from the suture, which is not in the least impressed, the whorl, before expanding to the carina, descends in a cylindrical or even slightly contracting form; the surface is a little roughened with slightly raised threads; the lines of growth run from the suture forward at first toward the left, not, as in the Challenger species, at once to the right into the sinus; and the embryonic whorls are more rounded, with a deeper suture and half a whorl fewer. It extremely resembles *Pleurotoma undata*, Lam., an Eocene fossil from Grignon; but has the spire more attenuated, the suture rather deeper, while the tubercles on the keel do not, as there, become longitudinal ribs, and the snout is much longer. It is this last feature distinctively which excludes the species from the *Typhlomangelia* group.

22. *Pleurotoma* (*Surcula*) *hemimeres*,[1] Watson (Pl. XXV. fig. 10).

Pleurotoma (*Surcula*) *hemimeres*, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 398.

Station 120. September 9, 1873. Lat. 8° 37′ S., long. 34° 28′ W. Off Pernambuco. 675 fathoms. Red mud.

Shell.—High, conical, with a small, round-tipped conical apex; ribless, but with a keel beset with longish narrow tubercles. *Sculpture:* Longitudinals—there are only fine hair-like lines of growth. Spirals—about $\frac{2}{3}$ down each whorl is a very sharp and prominent angulation, and the keel thus formed is beset by numerous small, sharpish, narrow and elongated tubercles, which fail to become ribs; of these tubercles there are about 12 on the earlier whorls, and they become more numerous on the succeeding whorls. Below this keel there is a straight-lined contraction; above it there is a long, slightly concave shoulder, with a delicate row of small tubercles at the top close to the suture. Both rows

[1] ἡμιμερής, halved.

of tubercles, but especially the upper, are very sharp and distinct on the earlier whorls, but lose individuality further down the spire. From the keel downwards the whorls are scored with flat rounded threads. *Colour* pale buff, deepening somewhat up the spire, glossy. *Spire* high, conical, the profile-lines only slightly interrupted by the prominence of the tubercled keel. *Apex:* the two embryonic whorls are smooth, small, conical, with a small rounded tip slightly flattened down on one side. *Whorls* 9 (remaining), short, of very regular increase, slightly concave in the shoulder, sharply angulated at the keel, and contracted into the suture below. The whole base and pillar have been broken away. *Suture* rather oblique, defined by the slight contraction of the superior and inferior whorls. *Mouth* is broken, but the sinus is broad, rounded, and deep, in consequence of the long forward sweep of the pinion-like edge of the outer lip.

This species exists only in one fragment; but its beauty and its strongly marked features make it worth notice. It extraordinarily resembles *Pleurotoma dimidiata*, Brocchi, but is a broader shell, with a coarser stumpier apex of fewer embryonic whorls, has no spirals above the keel, while those below are finer; the suture is much less sunken between the keels, and there is a substantial coronet of tubercles. *Pleurotoma powerii*, Calcara (a specimen of which I owe to the kindness of the Abbé Brugnone), has the upper part of the whorls above the keel free of spirals, and the apex is more like that of *Pleurotoma hemimeres*, but in form it is still slimmer than *Pleurotoma dimidiata*, and its sculpture otherwise is even less like.

23. *Pleurotoma* (*Surcula*) *anteridion*, Watson (Pl. XIX. fig. 6).

Pleurotoma (*Surcula*) *anteridion*, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 399.

Station 142. December 18, 1873. Lat. 35° 4′ S., long. 18° 37′ E. Off the Cape of Good Hope. 150 fathoms. Green sand. Bottom temperature 47°.

Shell.—High, narrow, biconically fusiform, subscalar, with angularly convex and longitudinally-ribbed whorls, thin, tawny. *Sculpture:* Longitudinals—a little way below the suture is an angulation where narrow, raised, oblique ribs begin; these slope from right to left; they extend to the suture, but not to the base, where they die out more gradually than they arose; they are parted by rounded hollows, which are wider than the ribs. There are about nineteen of these ribs and hollows on the last whorl, but fewer on each preceding one; besides these, there are very many fine hair-like flexuous lines of growth. Spirals—the shoulder below the suture (the sinus-area) has a few faint regular scratch-like lines; on the ribbed area these are stronger. On the base the interstices become somewhat narrower and more convex, till on the snout they rise into strongish threads, which at the very point again become weaker. *Colour* a light tawny, paler on the snout, and white on the pillar. *Spire* high, conical, and slopingly subscalar. *Apex* broken. *Whorls* probably 10, rather short, with a straight somewhat drooping shoulder, convex, and appearing

contracted below in consequence of the dying out of the longitudinal ribs as they approach the suture. The conical base contracts rather rapidly, and is prolonged into the straight, very slightly reverted, direct, narrow, cylindrical snout. *Suture* a fine, regular, squarely impressed line, whose course diverges a good deal from that of the spirals of sculpture. *Mouth* club-shaped, being roundly oval and not angulated above, and with a long, narrow, slightly twisted canal below. *Outer lip* sharp and thin, with a very regular curve from the suture to the base of the snout, along the edge of which it runs sharp and straight to the open, rounded, and thin point; when it leaves the body, it retires at once to the left, forming a deep, rounded, open sinus; from this point its edge sweeps out in a full convex curve, retreating slightly at the base of the snout, and then advancing straight to the point. *Inner lip* porcellanous, longitudinally marked, narrow, straight, cut away obliquely to a long fine point; and then continued along the canal in a thin sharp edge, which toward the point is slightly cut off backwards. H. 0·9 in. B. 0·32. Penultimate whorl, height 0·13. Mouth, total height 0·45, breadth 0·19.

The narrow sharpish ribs of this species are suggestive of small buttresses, from which feature the name is taken. The specimen is slightly chipped, and is, I think, not quite full-grown. It a little resembles the young of *Pleurotoma tenuis*, Reeve, from China; but the longitudinal ribs are not nodulous. In form it slightly recalls *Pleurotoma undatiruga*, Bivona, but in texture and all details is utterly different.

24. *Pleurotoma* (*Surcula*) *bolbodes*,[1] Watson (Pl. XXII. fig. 6).

Pleurotoma (*Surcula*) *bolbodes*, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 402.

Station 120. September 9, 1873. Lat. 8° 37′ S., long. 34° 28′ W. Off Pernambuco. 675 fathoms. Red mud.

Shell.—High, narrow, conical, with a large bulbous apex, a contracted conical base, and a long snout; scarcely carinated, ribbed, with spiral threads, and an impressed suture; pale buff. *Sculpture:* Longitudinals—the whorls are crossed from suture to suture by ribs, which are a little oblique and not curved; they are narrow, pinched in laterally, and most prominent a little above the middle of the whorls; they do not extend to the base, they are parted by shallow furrows rather wider than themselves; on the last whorl there are twelve, and they increase in number up the spire; those at the top are a little sinuous and crowded. The lines of growth are very faint, except on the base. Spirals—there are about ten rounded prominent threads on each whorl, which stand out with special prominence on the ribs; on the last whorl these continue with very considerable regularity and equality to the point of the shell; in the constriction below the suture

[1] βολβώδης, from its bulbous apex.

they are feeble. *Colour* pale buff, but probably white in the living shell. *Spire* conical, not much contracted; the first regular whorl is exceptionally tall, narrow, and cylindrical. *Apex* is a coarse swollen small bulb of little more than one smooth whorl, which lies very much on one side, with the extreme tip almost bent in under it. *Whorls* 6, high, of slow increase, the last a very little tumid; in the sinus-area they scarcely expand, but are convex below this point; the base contracts rapidly, and runs out into a longish narrow snout. *Suture* well marked and a little constricted. *Mouth* club-shaped. *Outer lip*, convex and in front direct; it retreats very slightly in its course from where it leaves the body, forming a very small, shallow, and open rounded sinus. *Inner lip* is slightly hollowed on the body; straight on the upper part of the pillar but early cut off, it advances with a long-drawn obliquity to the point of the shell. H. 0·32 in. B. 0·12. Penultimate whorl, height 0·06. Mouth, height 0·15, breadth 0·05.

I doubt whether the only specimen of this species is full-grown, and the mouth is a little chipped; but the lines of growth indicate plainly enough the form of the lip. It may be classed with the *Pleurotoma nivalis* group, but it has a decidedly longer snout than the Typhlomangelias.

25. *Pleurotoma* (*Surcula*) *gypsata*, Watson (Pl. XXV. fig. 1).

Pleurotoma (*Drillia*) *gypsata*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 413.

Station 169. July 10, 1874. Lat. 37° 34′ S., long. 179° 22′ E. North-east from New Zealand. 700 fathoms. Blue mud. Bottom temperature 40°.

Shell.—Strong, fusiform, biconical, scalar, shortly, sharply, and obliquely ribbed, keeled, constricted at the suture, with a long and rather inflated body-whorl and a largish snout. *Sculpture:* Longitudinals—on each whorl is a strongish angulation, forming a shoulder, crowned by a series of narrow elongated tubercles or short ribs; this coronated keel lies on the earlier whorls below, but on the later above the middle. The ribs do not reach the lower suture; in shape and breadth they are irregular, but are always somewhat swollen in the middle and pinched up into prominence; they are parted by flat open furrows of nearly double their width; on the body-whorl they extend very little below the shoulder, and still less above it. There are about twenty of these ribs on the last whorl, and fifteen on each of the earlier whorls. The surface is scored with hair-like lines of growth, of which every here and there, and especially on the base in the continuation of the riblets, one is stronger than the rest. Spirals—the carination at the shoulder is made more prominent by the sharp line of tubercles. The whole surface is covered with flatly rounded threads, which are roughened by the incremental lines; these threads are strongest on the snout, feeble on the body, and very faint in the sinus-area. *Colour* whitish under a yellowish epidermis, which is a rough but thin and persistent membrane. *Spire* high, scalar, conical. *Apex* eroded, but evidently small. *Whorls* 10 (?), of rather

rapid increase, high, angulated, with a long, rather high, and scarcely concave shoulder, and with a straight slight contraction to the lower suture; the last is very large in proportion to the rest, being long and somewhat tumid, and ends in an elongated, broad, unequal-sided snout. *Suture* very slight indeed; for though it is defined by the contraction of the whorls above and below, yet the inferior whorl laps up on the one above it so as almost to efface the junction-angle. *Mouth* pale buff-coloured within, long and narrow, angulated above, also at the keel, and also, very slightly, at the junction of the pillar and the body. *Outer lip:* from the body to the keel it is slightly concave and contracted; from the keel it curves very regularly to the point. On leaving the body the line of the edge runs quite straight forward for a short distance, and then curves round to the left, running out on the line of the ribs into a high-shouldered prominent wing, between which and the body-whorl the broad, deep, and rounded sinus lies: towards the front of the mouth it retreats rapidly to the point of the snout. *Inner lip* spreads rather broadly on the body, is a little thickened, and has a very slightly raised edge. The pillar is long, straight, narrow, and has in front a slightly twisted edge, but is not truncated. H. 1·75 in. B. 0·75. Penultimate whorl, height 0·3. Mouth, height 0·96, breadth 0·47.

It is unfortunate that this very interesting species is represented by only two dead and somewhat broken shells.

Dr H. Woodward, who kindly examined this species for me, says it is near *Pleurotoma rostrata*, Solander. That species is figured by Edwards in the Eocene Mollusca, published by the Palæont. Soc., p. 218, pl. xxvi. fig. 8. Compared with that figure, this is much stumpier, more scalar, more sharply keeled, and the spiral sculpture is very much weaker; but there is a great deal of affinity in the general features of the shell.

26. *Pleurotoma* (*Surcula*) *dissimilis*,[1] n. sp. (Pl. XXVI. fig. 3).

Station 214. February 10, 1875. Lat. 4° 33′ N., long. 127° 6′ E. South-east of the Philippines. 500 fathoms. Blue mud. Bottom temperature 41°·8.

Shell.—Large, long, fusiform, very finely striated, white, with rounded whorls, a very slightly impressed suture, a tall spire, a long unconstricted base, and a small snout. *Sculpture:* the surface, which is smooth and subglossy, is scored all over with fine hair-like lines of growth, of which a few at irregular intervals are slightly stronger than the rest. Spirals—there are very many feeble, narrow, irregular, subinterrupted threadlets, parted by almost obsolete furrows; they are a little stronger on the base, and weaker on the sinus region below the suture; on the back of the snout are 2 or 3 a little stronger than the rest. *Colour* yellowish ivory white. *Spire* high but solid, conical. *Apex* eroded. *Whorls* 7 remaining, convex from a very slight contraction towards both the

[1] So called from its being very little like a *Pleurotoma*.

upper and lower suture; there is besides a very faint approach to a carination in the middle of each whorl; they are of rapid but regular increase; the last one is long and a very little tumid; contracting on the base very gradually to the one-sided, longish, smallish, pointed snout. *Suture* fine but well marked, oblique. *Mouth* a very long and narrow oval, pointed above and below, oblique. *Outer lip* thin, regularly curved. The sinus is very broad, open and deep, and lies quite up to the suture. *Inner lip:* a very thin glaze spreads narrowly on the body; it is concave in form throughout; round the base of the pillar there is a very slight tumidity, the front of the pillar is twisted and fined away with a rounded and slightly prominent edge. H. 2·65 in. B. 0·87. Penultimate whorl, height 0·55. Breadth of first remaining whorl, 0·06. Mouth, height 1·22, breadth 0·43.

This is a very remarkable form, not at all like a *Pleurotoma*. *Pleurotoma tornata*, Dillw., is the form which most resembles it, but is much broader, with a more tumid body-whorl, a flatter-sided spire, and a much longer snout. There is only one specimen, and the outer lip, beset by one of the deep sea *Actiniæ*, is badly broken. I have given the size of the first remaining whorl of the apex, as only by such means is a common starting-point established for comparison with any other specimen.

27. *Pleurotoma* (*Genota*) *didyma*,[1] Watson (Pl. XXII. fig. 5).

Pleurotoma (*Genota*) *didyma*, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 404.

Station 23. March 15, 1873. Lat. 18° 24′ N., long. 63° 28′ W. Off Sombrero Island, West Indies. 450 fathoms. Pteropod ooze.

Shell.—High, mitriform, biconical, ribbed, and with spiral threads; the spire subscalar; the mouth narrow; the sinus very slight. *Sculpture:* Longitudinals—the whorls are crossed by eleven oblique, rather strong, but narrow hunchy ribs, with broad open furrows between; these ribs and furrows tend to disappear on the last whorl, and they die out on the base; there are also very fine, close, hair-like lines of growth. Spirals—the suture is not quite closely marginated below by a rather slight thread; the sinus-area below this is formed by a little open concave furrow; below this is a series of about 20 (on the penultimate whorl about 5) pretty equal rounded threads and furrows—the first is weaker than the rest; the second occupies the edge of the shoulder, and marks the angulation of the whorls, there rising (as does also the next thread below) into special prominence in crossing the ribs; towards the extreme point of the shell, beyond the threads above referred to, are three or four smaller closely crowded threads. *Colour* white. *Spire* high, conical, scalar. *Apex* broken (but probably blunt and *Mangelia*-like). *Whorls* below the embryonic ones 6–7, of slow and regular increase, short and broad, high but small shouldered, prominent above, and a little contracted below; the last contracts from the keel and forms a perfect cone on to the extreme point. *Mouth*

[1] δίδυμος, doubtful.

long and narrow, with parallel sides. *Outer lip* forms a right angle almost close up to the body, and just at this point forms a very slight shallow open sinus; below this it advances straight to the extreme point of the shell. *Inner lip* is very slightly concave; a thin layer of glaze crosses the body, but becomes thicker, with a prominent edge, down the pillar, which at its point is twisted, but is hardly oblique. H. 0·38 in. B. 0·13. Penultimate whorl, height 0·05. Mouth, height 0·2, breadth, 0·04.

The destruction of the apex in this specimen is unfortunate; but the form of the shell suggests a tip blunt, rounded, and short, as in *Mangelia*. The Messrs Adams have defined their subgenus *Genota* as having a deep posterior sinus, a feature which should exclude this species from the group; but since the only two species, *Pleurotoma mitræformis*, Wood, and *Pleurotoma papalis*, Reeve (if they be two), which they quote as types of the subgenus, have both a very slight sinus remote from the suture, the present species may be put along with these.

28. *Pleurotoma* (*Genota*) *engonia*, Watson[1] (Pl. XX. fig. 7).

Pleurotoma (*Genota*) *engonia*, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 405.

(?) Station 169. July 10, 1874. Lat. 37° 34′ S., long. 179° 22′ E. North-east from New Zealand. 700 fathoms. Blue mud. Bottom temperature 40°.

Station 232. May 12, 1875. Lat. 35° 11′ N., long. 139° 28′ E. Off Inosima, Japan. 345 fathoms. Green mud. Bottom temperature 41·1°.

Shell.—Fusiform, biconical, with an expressed rounded keel angulating the whorls, and a broad, prominent, lop-sided snout. *Sculpture:* Longitudinals—there are no ribs. The lines of growth are strong, hair-like, unequal, and close-set; on the keel which marks the line of the old sinuses they are exceptionally strong, prominent, regular, and a little remote, as they also are at the top of the whorls in the suture; still they are throughout rounded, not sharp. Spirals—the whorls are angulated about the middle, and project in a rather narrow, prominent, rounded keel, which is almost crenulated by the lines of growth. The whole surface is also covered by small, broadish, rounded, close-set spiral threads, which on the base are somewhat granulated. On the left side of the point of the snout they tend to become obsolete, as they also do on the earlier regular whorls. *Colour* porcellanous white. *Epidermis:* only one minute fragment remains, which seems thin, yellowish, and membranaceous. *Spire* high, subscalar, typically conical, the profile-lines being very little interrupted by the carinal projection. *Apex* blunt, rounded, consisting of two smooth globular whorls. *Whorls* 8, short, broad, of regular increase, the last rather large; they have a sloping, slightly concave shoulder; their profile below the keel is straight and scarcely contracted. At the top of each whorl there is a slight collar, which gives the effect of a very slight canaliculation to the suture.

[1] ἐγγώνιος, angular.

The base of the shell is somewhat swollen, and prolonged into the shortish, broad, and very unequal-sided snout, which lies quite on one side of the base. *Suture* strong and slightly canaliculated. *Mouth* large, almost rhomboidally pear-shaped, sharply angled above, and with a broad open canal below. *Outer lip*, very regularly curved throughout; its edge, which is thin and sharp, retreats at once on leaving the body, forming an open V-shaped sinus, which is rounded at the angle; below this it sweeps downwards and very little forwards, forming a very low-shouldered wing; towards the lower part of the mouth it curves very regularly backwards to the point of the pillar. *Inner lip*, which is polished and porcellanous, is rather broadly excavated in the substance of the shell; it is scarcely convex on the body, very slightly concave at the junction with the pillar, which is narrow and short, being very obliquely truncate in front, with a fine, but strong, sharpish twisted edge. H. 1·26 in. B. 0·52. Penultimate whorl, height 0·23. Mouth, height 0·6, breadth 0·34.

I have marked the specimen from Station 169 with a query. It is very much rubbed; but the sculpture of the shell, and even of the sinus scars, is perfectly preserved. This and the proportion and form of the successive whorls are similar, though the line of keel lies a little higher; the shoulder is squarer and shorter, while the line from the keel to the suture is longer. Were the localities of the two less distant and dissimilar, I would not hesitate. Still the depth at which they live may secure similar conditions for the species even from 35° N. to 37° S.; and in any case I do not feel able to part the specimens.

In its expressed keel this very remarkable shell recalls the young of *Pleurotoma tornata*, Dillw., or of *Pleurotoma circinata*, Dall. In form it is slightly like *Pleurotoma spirata*, Lam., or *Pleurotoma obesa*, Reeve. The resemblance most striking of all, however, both in form and sculpture, is one to which my attention was kindly drawn by Dr H. Woodward—that, viz., to *Pleurotoma cataphracta*, Brocchi, a fossil from the Upper Miocene of the Vienna basin and Northern Italy (Brocchi, vol. ii. p. 221, No. 52, vol. viii. p. 16; Lam., Anim. s. vert., vol. ix. p. 367; and Philippi, Enum. Moll. Sicil., vol. i. p. 199, vol. ii. p. 171). Compared with that species, this New Zealand form is slimmer, the angulation of the whorls is less, but the keel on the angulation is more prominent though less nodulous and much lower placed, and the sinus is more remote from the suture and is sharper.

This and the following species are classed under *Genota*, in accordance with what is seemingly the principle indicated by the arrangement adopted in the British Museum, though I doubt whether that accords with Adams' idea of their genus. *Cryptoconus* might perhaps offer a better place for them, but I do not know the shells of that group well enough, not understanding its diagnosis sufficiently, to judge.

29. *Pleurotoma* (*Genota*) *atractoïdes*,[1] Watson (Pl. XX. fig. 8).

Pleurotoma (*Genota*) *atractoïdes*, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 407.

Station 210. January 25, 1875. Lat. 9° 26′ N., long. 123° 45′ E. Philippines. 375 fathoms. Blue mud. Bottom temperature 54·1°.

[1] ἀτρακτοειδής, spindle-shaped.

Shell.—Fusiform, biconical, very slightly and bluntly angulated, with a scarcely convex base, elongated into a largish, slightly reverted, rather equal-sided snout. *Sculpture:* Longitudinals—there are no ribs; but the close-set, hair-like lines of growth, at nearly regular intervals over the whole surface, rise into thread-like folds which score the shell rather markedly. Spirals—near the bottom of each whorl there is a slight keel on the line of the old sinus-scars; it includes two bluntly rounded, close-set threads, which are crenulated by a series of small squarish tubercles arranged in pairs, one on each thread and placed one above the other, thus forming short little bars; they are parted by furrows broader than themselves. There are about forty of these bars on the last whorl, becoming more irregular towards the mouth: on the penultimate whorl there are about fifty; but they again diminish in number on the upper whorls. Answering to these is another double row at the top of the whorls immediately below the suture; only in these the under thread is more prominent, and has rounded tubercles, while the upper thread is scored by longitudinally narrow sharpish little bars; between these infra-sutural threads and the carinal threads the slightly concave surface is scored by four finer threads set with little white nodules. Of these, the second thread from above is the strongest, and its nodules are rhomboidal. Below the keel the whole surface is scored by distinct rounded threads, which rise into small nodules where crossed by the stronger lines of growth; the intervals between these are more than double the width of the threads; they rather increase in distinctness forwards; two groups of three and then one by itself have finer threads, like shadows, in the intervals below them. *Colour* porcellanous white, with a buff apex and a faint tinge of suffused buff on the body, especially in the sinus-scar and within the mouth; the nodules stand out pure white. *Spire* high and perfectly conical. *Apex* 1½ small, rounded, globular, brownish-buff coloured, embryonic whorls, of which the first is a good deal turned up on one side. *Whorls* 10, slightly keeled and banded, conical, broad, short and of very regular increase; the last rather large, long, scarcely tumid on the base, gradually produced into a large, conical, rather equal-sided snout, which is obliquely cut off from the point of the pillar backwards towards the outer lip, and which has a slight twist toward the right. *Suture* slightly canaliculated, from the thickening of the infra-sutural collar, behind which it is a little sharply cut in. *Mouth* long and narrow, sharply angulated above, scarcely contracted below, and with hardly any canal in front; there is a slight tinge of buff within. *Outer lip* very sharp and thin and a little contracted, except just toward the end of the canal, where it becomes slightly patulous; its course is an angulated curve, steep above and long-drawn below. On leaving the body, it retreats very slightly and almost straight to the rather distant, bluntly rounded, large, open, and rectangular sinus; from this point its edge forms an almost semicircular curve to the point of the shell. *Inner lip* is hollowed rather deeply into the substance of the shell, which forms a raised edge outside of it; it is narrow on the body, rather broad on the pillar. The line across the body and down the pillar is very little concave. The pillar is long

and narrow, running out to a sharp point, which has a fine, rounded, and slightly twisted edge, but can scarcely be said to be in the least degree obliquely cut off. H. 1·4 in. B. 0·53. Penultimate whorl, height 0·2. Mouth, height 0·85, breadth 0·3.

This is a peculiarly beautiful species, singular in the breadth of its form, but very much more in the extreme regularity of its biconically fusiform shape. It recalls in an extraordinary way *Conus dormitor*, Solander, an Eocene fossil from the Barton beds of the Hampshire basin, and the cone-like Pleurotomas of that formation, such as *Pleurotoma prisca*, Sol., *Pleurotoma amphiconus*, Sow., *Pleurotoma conoïdes*, Sol., and *Pleurotoma biconus*, Edw. Dr H. Woodward says it is near *Pleurotoma ventricosa*, Lam., Anim. s. vert., vol. ix. p. 372, a Grignon fossil, with which I have not had an opportunity of comparing it in consequence of the transfer of the Geological collections from the British Museum to Kensington.

30. *Pleurotoma* (*Drillia*) *laterculata*, Sowerby (Pl. XVIII. fig. 5).

Pleurotoma laterculata, Sowerby, Proc. Zool. Soc. Lond., 1870, p. 253.
„ (*Drillia*) *laterculata*, E. A. Smith, "Alert" Collections, p. 38, No. 5, pl. iv. fig. E.

Station 189. September 11, 1874. Lat. 9° 36′ S., long. 137° 50′ E. West of Cape York and south-west of Papua. 25 fathoms. Green mud.

Habitat.—China Sea (Sowerby).

31. *Pleurotoma* (*Drillia*) *incrassata*, Dujardin.

Pleurotoma elegans (not of Defrance, 1826), Scacchi, Not. Conch. foss. Gravina, 1836, p. 43, No. 129, pl. i. fig. 18.
„ *incrassata*, Dujardin, Mém. Touraine, Soc. Géol. de France, vol. ii. pt. 2, 1837, p. 292, pl. xx. fig. 28.
„ *maravignæ*, Bivona, fil., Gen. et Spec. Nuov. posthum., 1838, p. 13.
„ „ Reeve, Conch. Icon., vol. i. pl. xvi. fig. 133 (see Errata), 1843.
„ *elegans*, Philippi, Enum. Moll. Sicil., 1844, vol. ii. pp. 168, 175, pl. xxvi. fig. 5.
„ *incrassata*, Hörnæs, Moll. foss. Wien, 1853, vol. i. p. 383, pl. xl. fig. 14.
„ *maravignæ*, Weinkauff, Conch. Mittelmeer., 1868, vol. ii. p. 122.
„ *incrassata*, Bellardi, Moll. terz. Piemonte, 1877, vol. ii. p. 140.
„ *maravignæ*, Monterosato, Enumeraz., 1878, p. 45.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 96, pl. xxi. figs. 1, 3.
„ *incrassata*, Seguenza, Form. terz. Calab., 1880, p. 352.
„ *maravignæ*, Tryon, Manual, vol. vi. p. 199, pl. viii. fig. 12.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Habitat.—Mediterranean (Bivona), Madeira (Watson), North-West Africa, Gibraltar, Canaries, 20 to 100 fathoms (British Museum).

Fossil.—From the Middle Miocene onwards.

The changes made on the name of this beautiful and well-known species are very much to be deplored.

32. *Pleurotoma* (*Drillia*) *latisinuata*, E. A. Smith (Pl. XVIII. fig. 6).

Pleurotoma (*Drillia*) *latisinuata*, E. A. Smith, New Pleurotomidæ, Ann. and Mag. Nat. Hist., ser. 4, vol. xix., June 1877, p. 494.

Station 203. October 31, 1874. Lat. 11° 6′ N., long. 123° 9′ W. Philippines. 20 fathoms. Mud.

Habitat.—China (Smith).

33. *Pleurotoma* (*Drillia*) *metcalfei*, Angas.

Drillia metcalfei, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 113, pl. xiii. fig. 16, and p. 202, No. 102.

„ *sinensis*, Tryon, Manual, vol. vi. p. 201, pl. xi. fig. 5.

April 23, 1874. Port Jackson, Sydney. 6 to 15 fathoms.

Habitat.—Port Jackson, deep water (Angas).

34. *Pleurotoma* (*Drillia*) *quoyi*, Desmoulins.

Pleurotoma monile (not of Brocchi), Kiener, Iconog., p. 52, pl. xv. fig. 2.

„ *quoyi*, Desmoulins, Revue des Pleurotomes, Actes Soc. Linn. Bordeaux, 1842, p. 61.

„ „ Reeve, Conch. Icon., vol. i. pl. xvi. fig. 137.

„ (*Surgula*) *quoyi*, Weinkauff, Conch. Cab. (ed Küster), p. 101, pl. xxii. fig. 2.

„ (*Surcula*) *quoyi*, Tryon, Manual, vol. vi. p. 242, pl. vii. fig. 95.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

Habitat.—Australia (Kiener) and Tasmania (British Museum).

35. *Pleurotoma* (*Drillia*) *incilis*, Watson (Pl. XXIV. fig. 5).

Pleurotoma (*Drillia*) *incilis*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 425.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Fusiform, narrow, finely ribbed and spiralled, with a high, conical, subscalar, fine-pointed spire; a short conical base produced into a small, narrow, triangular snout. *Sculpture:* There are fine sharpish riblets parted by furrows of twice their breadth, which run pretty continuously with a slight twist to the left from whorl to whorl; there are about eighteen or twenty on the last whorl, and fewer on each preceding whorl; they are a little oblique, and sinuous on the base; they originate below the sinus-area and run down to the inferior suture; on the base they become finer and more crowded, and gradually die out without reaching the snout; the lines of growth are shown by fine close-set scratches. Spirals—immediately below the suture there is a broadish depressed band constituting the

sinus-area, only marked by the lines of growth and microscopic spirals; this band at the top of each whorl gives the scalar appearance to the spire; below this is a slight raised border, where the longitudinal ribs arise; and here there is an angulation of the whorl, which is sharp and median on the upper whorls, but is less so on the last. Close below the border of the sinus-area is the first spiral thread, a series of which, fine, rounded, little raised, cover the rest of the shell, rising into small knots on the riblets; of these threads there are about two on the earlier whorls, four on the penultimate, and about nine or ten on the last, exclusive of those on the snout, of which there are about nine: of these the highest are a little stronger, and the following ones a little more crowded than the others. The whole surface of the shell is microscopically granulated. *Colour* dead white. *Spire* high, narrow, conical, subscalar. *Apex* consists of four conical embryonic whorls rising to a minute rounded point a little bent over to one side; they have a sharp expressed keel and a broad, slightly impressed suture. *Whorls* 11, rather short, of very regular increase; they have a sloping, slightly sunken shoulder, below which they have a slight angulation, which is made prominent by the swelling of the riblets and the spiral thread which connects these; from this point, which lies rather above the middle, the whorls contract gradually downwards till just at the lower suture, where there is a very slight sudden constriction. The last whorl is small, contracting from the keel, with a pinch in toward the point at the base, which is produced into a narrow, slightly elongated, triangular snout. *Suture:* there is a small narrow depression in the bottom of the open constriction of the whorls. *Mouth* oblique, narrow, pear-shaped, slightly angulated above, and produced below into a narrow canal. *Outer lip* thin and sharp, but strengthened by a remote, rather prominent though narrow labral varix: it is only slightly curved on the profile of the shell; but the lip-edge advances in a very high prominent shoulder, between which and the body lies the narrow, rounded, gutter-like sinus, with a prominent reverted outer edge all round. *Inner lip* slightly thickened and feebly tubercled above; it is thin on the body, but is thicker again on the pillar, on which it advances very directly, with a slightly raised edge, but does not reach the point of the shell, the pillar being cut off with a long, oblique, narrow, barely twisted edge, which advances along the side of the canal beyond the thin callus of the pillar. H. 0·57 in. B. 0·21. Penultimate whorl, height 0·09. Mouth, height 0·25, breadth 0·08.

This species considerably resembles *Pleurotoma amœna*, E. A. Sm., from New Zealand; but that species has not so scalar a spire, its base and canal are longer, and its apex is blunt. The name of the species is derived from the sculpture.

36. *Pleurotoma* (*Drillia*) *sterrha*,[1] Watson (Pl. XXI. fig. 3).

Pleurotoma (*Drillia*) *sterrha*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 426.

September 8, 1874. Flinders Passage, off Cape York, Torres Strait. 7 fathoms.

September 8, 1874. Cape York, off Albany Island. 3 to 12 fathoms.

[1] στερρός, solid.

Shell.—Very strong, high, narrow, conical, with a subconical base, strongish, rather crowded ribs, and small spiral threads, variegated in colour. *Sculpture:* Longitudinals—the whorls are crossed by rather straight but slightly oblique ribs, which are rather strong than high; they extend to the base, but not to the snout; they are dislocated at the top, and are not continuous from whorl to whorl: there are about twelve on the last two whorls; but they diminish rapidly in number up the spire: every here and there one becomes somewhat varicose; on the base they become flexuous, and tend to bifurcate; they are parted by narrow and shallow furrows: the lines of growth are fine and crowded, but on the tops of the ribs, especially on the base, they tend to cut the surface into coarsish tubercles. Spirals—below the suture is a broadish but superficial constriction, which is the sinus-area, and is occupied by the dislocated tops of the ribs; these become on the upper whorls more and more a slightly prominent tubercled string-course below the suture; this band is cut off by a slight furrow from the true top of the ribs, which project here a little angularly. The whole surface is closely beset with spiral threads and furrows; of these threads that at the suture is broadish but depressed; below it is another stronger. On the body and base are about ten, accompanied by one or sometimes two very small ones. The furrows are broadish, square, and flat in the bottom; on the snout are three or four; and on the twisted cord in front there are five. *Colour:* a narrow band above the suture and the sinus-area below are of a deep rich buff, which extends to the whole base, intensifying to a rich ruddy orange on the snout and pillar; the ribs are white, but except on the snout their interstices are dark purply brown. *Spire* very regularly conical and high. *Apex* consists of about $2\frac{1}{4}$ very small, conically tapering, embryonic whorls, parted by a very fine suture, and rising to a minute rounded tip, which is very much bent down on one side. *Whorls* 13 in all, conical, barely convex, and hardly angulated near the top; they are short and broad, of very regular slow increase; the last is small, and contracts quickly but not deeply, with a rounded base prolonged to a broad conical snout which is obliquely cut off in front with a twist, which forms a sort of slight cord across the point. *Suture* slightly impressed, distinct. *Mouth* small, narrow, pear-shaped, rather sharply pointed above, with a longish, curved, rather narrow, and open canal in front, which runs down the massive snout, and is patulous, till at the very point the edge is slightly inverted. *Outer lip* broken: the sinus lies about $\frac{1}{10}$ of an inch below the suture, from which it is separated by a strong shelf of that breadth and about $\frac{1}{10}$ inch long; it is deep, rounded, and narrow, being shut in by the high shoulder into which the outer lip projects below it; orange-coloured, through which the dark bars shine. *Inner lip:* there is a small but thick and narrow pad above; below it is reverted on the pillar, and has a raised edge; in front it is not bent back again, but runs down to the point with a prominent sharp edge: the pillar is rather short, strong, not broad, conical, sharp-pointed, not twisted, and not cut off obliquely, as usual, from the right of the shell towards the left, but, on the contrary, from the left to the right: and here the projection of the lip-

edge leaves a small, shallow, umbilical furrow. *Operculum* typical, having the nucleus apical and being curved; thin, rather strongly marked with the lines of growth, and having on its outer face a small, prominent, but not thickened bank or rising in the middle from end to end. H. 1·42 in. B. 0·45. Penultimate whorl, height 0·23. Mouth, height 0·6, breadth 0·24.

The specimen of this fine species obtained from off Albany Island is full-grown, and is very markedly broader than the other; but in all other respects they are identical. Otherwise like *Pleurotoma interrupta*, Lam., in form, it has a longer pillar. It has some resemblance in shape to *Pleurotoma rosaria*, Reeve, but in all details is most distinct.

37. *Pleurotoma* (*Drillia*) *climacota*,[1] Watson (Pl. XVIII. fig. 1).

Pleurotoma (*Drillia*) *climacota*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 428.

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ W. Inside the reef, Tongatabu. 18 fathoms. Coral mud.

Shell.—Strong, biconical, with a high, pointed spire, and a short, lop-sided, but truly conical base, reticulated with ribs and spirals, and with a constricted band below the suture. *Sculpture:* Longitudinals—there are about 15 or 16 rather narrow, sharpish ribs on each whorl, with intervening furrows of rather greater breadth; they cross the whorls with very little obliquity from suture to suture, and on the last extend to the very point; a few of them bifurcate on the base; the lines of growth are very slight. Spirals—below the suture is a band about $\frac{1}{12}$ of an inch high, which constricts the upper part of the whorl to the breadth of the base of the one above; this forms the sinus-area: below this is a shoulder on which the ribs project. There are about sixteen or seventeen rounded spiral threads, which are feeble in the furrows, but rise into small rounded tubercles on the ribs; they are parted by shallow flat furrows of about the same breadth: of these spiral threads there are four on the penultimate whorl; and they diminish in number up the spire. The whole surface is very finely spirally striated; and there are microscopic granulations besides. *Colour* white. *Spire* very regularly conical, but distinctly scalar from the angular projection of the shoulder. *Apex* somewhat worn, but small, apparently consisting of two conical, rounded, embryonic whorls with a fine sharp suture. *Whorls* 10 in all, rather high, of very regular and slow increase, angulated by the constriction and the shoulder below it. The upper whorls are cylindrical below the shoulder; but the body-whorl contracts almost at once, and on the base does so very rapidly and with very straight lines, so that this whorl is very small. *Suture* very small and faint. *Mouth* small, narrow, elongately oval. *Outer lip* broken: the sinus lies

[1] κλιμακωτός, scalar.

close up to the top of the whorl, and is small, round, and deep. *Inner lip:* there is a small thick pad above; but below it is thin, narrow, slightly turned back on the straight pillar; but toward the point it is again turned forward on the edge of the blunt and hardly twisted lip. H. 0·63 in. B. 0·26. Penultimate whorl, height 0·13. Mouth, height 0·25, breadth 0·11.

In form, though broader, this species a good deal resembles *Pleurotoma barkliensis*, H. Ad.; but in all details it is unlike. In form it slightly resembles *Pleurotoma* (*Bela*) *harpularia*, Couth., but has the base less elongated and more pinched in, the whorls more cylindrical, and the whole shell more spindle-shaped, with coarser, stronger, and fewer spiral threads, forming tubercles on the ribs. It is not unlike *Pleurotoma granularis*, E. A. Sm., Brit. Mus., but has narrower, sharper, and more widely parted ribs and a more conical spire.

38. *Pleurotoma* (*Drillia*) *horrenda*,[1] n. sp. (Pl. XXVI. fig. 4).

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Very coarse and strong, long, narrow, with a concave conical base, huge hunchy ribs, and coarse spiral threads. *Sculpture:* Longitudinals—there are six enormous hunchy oblique ribs on each whorl, which die out on the base and at the sinus below the suture, but reach the suture at the bottom of the upper whorls; they are parted by broad open furrows, which run obliquely to the left and more or less continuously down the spire; these ribs and furrows are roughened by coarse unequal lines of growth. Spirals—the surface is scored by strong rough threads parted by wider furrows; these threads are absent in the deep, strong, shallow, sinus-furrow below the suture, in which, however, a few feeble spiral threads are found; two, a little stronger, marginate the under side of the suture. *Colour:* the shell is weathered, but seems to have been of a uniform pale tint. *Spire* very tall, narrow, and conical. *Apex* broken. *Whorls* 11 remaining, convex, of slow increase; the last is hunchy but not large, and is drawn out into a concave base with a broad snout. *Suture* small, very much distorted by the longitudinal ribs. *Mouth* small, elongately and gibbously pear-shaped. *Outer lip* immensely but remotely thickened outside by the last rib, from which it is bevelled off to a narrow edge; the U-shaped sinus is deep, broad, and strong, close up to the suture but parted from it by a big triangular shelf; below it the lip edge advances very much and then retreats again in front. *Inner lip:* there is a thin broad glaze on the pillar, which is very strong, oblique to the left, slightly cut off in front, where alone it is twisted with a thin rounded edge. H. 2·37 in. B. 0·77. Penultimate whorl, height 0·33. Breath of first remaining whorl 0·07. Mouth, height 0·98, breadth 0·36.

[1] "Monstrum horrendum."

Some of Bellardi's fossil Surculas from Piedmont, such as *Pleurotoma* (*Surcula*) *Lamarcki*, or *Pleurotoma forastii*, or *Pleurotoma recticosta* with a shorter and broader snout, would resemble this more than any. An elongated *Pleurotoma crenularis*, Lam., would have some resemblance, but I really do not know with what to compare it. The form of its ribs is slightly suggestive of *Pleurotoma consociata*, E. A. Sm.

39. *Pleurotoma* (*Drillia*) *kymatoessa*,[1] n. sp. (Pl. XXVI. fig. 5).

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 fathoms. Sand and shells.

Shell.—Small, strong, narrow, white, wavily-ribbed, spiralled, with a short and small last whorl, a short base, a small snout, a high spire, and a small blunt white apex. *Sculpture:* Longitudinals—there are in the middle of each whorl about 14 feeble little ribs which do not extend to either suture nor to the base; the last forms a strong varix remote from the outer lip edge and extends from the suture to the canal; there are, besides, fine hair-like lines of growth. Spirals—above the periphery there are fine rounded threadlets evenly and rather remotely parted; at the periphery there are about four somewhat stronger than the others, parted by shallow widish furrows, in which there is generally a much smaller threadlet; on the base are 20 to 25 fine round threads, stronger than those at the shoulder and weaker than those at the periphery; they are extremely equal and regular till at the very point, where they become weak and unequal. *Colour* greyish porcellanous white, with a faint stain of ruddy brown both at the top and at the point of the mouth on both lips, and a very faint trace of the same on the base. *Spire* high, narrow, conical, subscalar. *Apex* blunt, rounded, but small, consisting of $2\frac{1}{2}$ quite smooth convex whorls, of which the small extreme tip is a little flattened down on one side. *Whorls* 9 in all; they are subangulated above the middle, short, the last is small, subtumid above with a short rounded base, narrowing rapidly to a stumpy, twisted, slightly reverted, and very emarginate snout. *Suture* barely recognisable, except for the contraction of the whorls rounding into it above and below. *Mouth* narrowly pear-shaped, with a short, narrow, bent canal in front. *Outer lip* rather strong, with a narrow undulated edge; it has a deep, narrow, rounded, marginated sinus above, separated from the suture by a long, strong, narrow tongue or shelf; the margin of the sinus is prolonged obliquely downwards in a strong, narrow, remote, white varix, in front of which the lip projects in a long prominent sweep. *Inner lip* thickened and tubercled above; it is thin and short on the body, where it is flat; it joins the pillar at an obtuse angle and then runs very direct down the oblique pillar, which has no twist but a sharp straight edge, and a sharp but strong point; behind the edge there is a very minute shallow furrow. H. 0·98 in. B. 0·19. Penultimate whorl, height 0·08. Mouth, height 0·19, breadth 0·09.

[1] κυματόεις, wavy.

40. *Pleurotoma* (*Drillia*) *spadix*,[1] n. sp. (Pl. XXVI. fig. 6).

Station 163B. June 3, 1874. Lat. 33° 51′ 15″ S., long. 151° 22′ 15″ E. Port Jackson, Sydney. 35 fathoms. Hard ground.

Shell.—Small, strong, narrow, palish chestnut, tubercled, spiralled, with a small last whorl, a short base, a small snout, a high spire, and a small blunt glossy apex. *Sculpture:* Longitudinals—there are very numerous fine hair-like lines of growth; a little below the middle of each whorl is a row of elongated bifid white tubercles. Spirals—at the periphery the shell is bluntly angulated by a double rounded thread on which the white tubercles occur; below this are 7 broadish flat threads parted by rather broader shallow intervals in each of which are 2 or 3 very fine flat threadlets; these extend to the snout, but the threads there are stronger than the fine and weaker than the strong threads above, they are also less regular; similar to these last, but more regular, are the threads on the shoulder above the periphery. *Colour* a suffused pale chesnut, paler on the outer lip and at the top of the mouth, and white on the tubercles. *Spire* high, narrow, conical. *Apex* blunt, small, brilliant, consisting of $2\frac{3}{4}$ embryonic whorls. *Whorls* $7\frac{1}{2}$ in all; they are subangulated below the middle, a little high; the last is small, with a conical lop-sided base and no definite snout, obliquely truncate but hardly reverted at the point. *Suture* fairly distinct, oblique. *Mouth* oblique, oblong, of nearly the same breadth from above to the point of the canal. *Outer lip* strengthened externally by a broadish, rather remote varix, from which the edge is bevelled off regularly; the sinus is U-shaped, deepish but broad; it lies at the top of the mouth, but is separated from the suture by a little, irregular, strong, slightly ascending shelf; below the sinus the lip-edge sweeps forward and then advances straight to the point of the shell. *Inner lip* thick at the corner of the sinus but only a thin glaze below; it is very short on the body, concave at the base of the pillar, down which it runs direct and oblique, without any cutting off or twisting of the edge, to the small sharp pillar-point. H. 0·45 in. B. 0·17. Penultimate whorl, height 0·07. Mouth, height 0·18, breadth 0·08.

41. *Pleurotoma* (*Rhaphitoma*)[2] *rhysa*,[3] Watson (Pl. XXI. fig. 2).

Pleurotoma (*Surcula*) *rhysa*, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 400.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—High, narrow, conical, with a small apex, a contracted, conical base, and a longish narrow snout; carinated, ribbed, with spiral threads, pale buff. *Sculpture:* the

[1] So called from its colour.

[2] This is the *Rhaphitoma* of Bellardi, not of Sars (Moll. Arct. Norv., p. 218), whose genus of this name is quite different, in that it has spiral threads, but is not longitudinally plicate nor cancellated, while Bellardi's *Rhaphitoma* is distinctively "*longitudinaliter plicata*" (see Bellardi, Moll. terz. Piemonte, &c., vol. ii. p. 297).

[3] ῥυσός, wrinkled.

whole surface is frosted over with microscopic tubercles. Longitudinals—there are on the last whorl 16 narrow, raised, dextrally convex, and rather oblique ribs; originating at the angle of the whorls, where they are a little tubercled and swollen; they are parted by furrows of about the same breadth as themselves; they die out across the base, and do not appear on the snout. There are about 13 on the penultimate whorl, and they diminish rapidly up the spire; the lines of growth are exceedingly faint and few, but sharp; they are most visible in the sinus-area and on the snout. Spirals—the suture is marginated above by a minute thread, which lies at the bottom of the superior whorl. The sinus-area is bare. Slightly above the middle of the whorls is the strong angulation, to which the prominence of the ribs originating at this point gives great additional sharpness and distinctness. From this to the point of the shell the surface is scored by rounded and prominent threads; of these there are three, pretty equal, on the earlier whorls, the third forming the supra-sutural margination; a fourth appears on the penultimate whorl, and 19 or 20 on the last, with one or two fainter ones between; the first two are feebler and closer set than the rest; on the body they are rather distant, on the front of the shell rather stronger and close set. *Colour* a pale buff, but not improbably white when fresh. *Spire* conical, subscalar in consequence of the prominence of the keel. *Apex* is small, roundedly sharp, consisting of $3\frac{1}{4}$ carinated, but otherwise perfectly smooth, whorls, which form a short compact little cone, of which the extreme tip is a little obliquely flattened down on one side. *Whorls* 10 in all; there is a drooping and very slightly concave shoulder below the suture; the greatest breadth is at the keel, below which the whorls begin faintly, and with a very slightly convex profile, to contract into the inferior suture; the last contracts rather rapidly into a short conical base, running out into a narrow, straight, somewhat one-sided, and not very long snout. *Suture* invisible but for the marginating threads above and below it. *Mouth* club-shaped, being pointedly ovate above, and running out below into a well-marked canal. *Outer lip* concave below the suture and angulated at the keel; it is convex in its sweep to the edge of the canal, from which it runs directly and obliquely to the rounded and open point of the pillar. In leaving the body it retreats at once to the right to form the rounded sinus, which has an excessively short upper side, but becomes large (though hardly deep) from the great forward wing-like sweep of its lower margin, whose course is quite independent of the ribs; toward the edge of the canal this curve again retreats to the point of the shell. *Inner lip* is a thin narrow glaze margined with a minute furrow; it is oblique, but scarcely convex across the body, direct on the short pillar, and cut off with a long slope to the point of the canal, its edge being narrow, rounded, and scarcely at all twisted. H. 0·43 in. B. 0·17. Penultimate whorl, height 0·07. Mouth, height 0·2, breadth 0·08.

This species may be associated with the *Pleurotoma nivalis*, Lovén, group; for though very unlike in texture of shell and length of mouth, yet the general form and style of ribbing are somewhat similar.

42. *Pleurotoma* (*Crassispira*) *owenii*, Gray.

Pleurotoma (*Genota*) *owenii*, Gray, MS., Brit. Museum.
Clavatula striata, Gray, Appendix to King's Australia, p. 485 (*teste* E. A. Smith).
(?) *Pleurotoma owenii*, Reeve, Conch. Icon., vol. i. pl. ix. fig. 70.
Drillia (*Crassispira*) *owenii*, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 202, No. 99.
Pleurotoma (*Surgula*) *owenii*, Weinkauff, Conch. Cab. (ed. Küster), p. 98, sp. 117, pl. xxi. fig. 5.
Surcula owenii, Tryon, Manual, vol. vi. p. 242, pl. vii. fig. 91.

April 17 and 18, 1874. Port-Jackson, Sydney. 2 to 10 fathoms.

Habitat.—East coast of Africa (Reeve), Sydney, and Tonga Islands (British Museum).

Reeve's figure and description of this species and the locality assigned to it suggest something quite different from the type preserved in the British Museum.

43. *Pleurotoma* (*Bela*) *ula*,[1] Watson (Pl. XXII. fig. 1).

Pleurotoma (*Drillia*) *ula*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 420.

Station 169. July 10, 1874. Lat. 37° 34′ S., long. 179° 22′ E. North-east from New Zealand. 700 fathoms. Blue mud. Bottom temperature 40°.

Shell.—Rather short, fusiform, biconical, scalar, angulated, obsoletely ribbed, with rather strong spiral threads. The snout is rather short, broadish, and lop-sided. *Sculpture:* Longitudinals—there are on the last whorl about 18 very oblique, curved, narrow, rather obsolete, irregularly arranged riblets parted by wider shallow furrows; they originate faintly at the suture, are strongest and somewhat mucronate at the angulation, extend to the lower suture, and appear on the base, but not on the snout; they are much stronger on the earlier whorls than on the last one. There are very many fine hair-like lines of growth. Spirals—there are a great many remote hair-like threads; on the shoulder below the suture these are fine and closer-set than on the body and base; the carinal one at the angulation and that next below this, especially the first, are strong; they are ornamented with close-set, round, minute granules, which swell into small prominent tubercles in crossing the riblets; those on the carinal spiral in particular are high, sharp, and horizontally elongated. In the interstices of the ribs and spirals the whole surface is microscopically granulated: it is this granulated surface which gives the peculiar crisp aspect to the texture of the shell, from which its name is taken. *Colour* semi-transparent flinty, white, with a crisp or slightly frosted aspect. *Spire* scalar, rather stumpily conical, with its profile-lines much interrupted by the constriction of the sutures. *Apex:* there are two globose embryonic whorls, of which the first is immersed, but scarcely flattened down on one side; they are rather remotely microscopically regularly striated. *Whorls* 5½ in

[1] οὖλος, crisp.

all; they are short, broad, of slow increase, with a rather long sloping shoulder and a sharp carinated angle, below which they are cylindrical, with a very slight contraction to the suture; the last is broadest at the keel, and from this point convexly contracted to the rather short, broadish, conical snout. *Suture* linear, but well marked by the contraction of the whorls. *Mouth* rather large, rhomboidally pear-shaped, with three angles above, and prolonged below into a wide open canal. *Outer lip* thin, angulated, rectilinear above to the keel, flatly curved below; on leaving the body it at once retreats, forming in the shoulder a shallow, open, rounded sinus; below the angle it advances very little; and at the snout its retreat is slight. *Inner lip:* there is a thin narrow glaze on the body and pillar; at the base of the pillar is a slight rounded angle: the pillar is short, conical, and straight; its point is very slight truncate, with a narrow, rounded, but scarcely twisted edge. H. 0·24 in. B. 0·117. Penultimate whorl, height 0·04. Mouth, height 0·12, breadth 0·06.

This shell may very likely be immature. The external lip in *Pleurotoma* is generally so thin that it is difficult to determine from it when the shell is full-grown.

44. *Pleurotoma* (*Bela*) *phœacra*,[1] Watson (Pl. XXI. fig. 5).

Pleurotoma (*Drillia*) *phœacra*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 423.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—High, conical, angulated, tubercled, thin, polished, glassy, with a blunt, dun apex, a contracted base, and a longish pillar. *Sculpture:* Longitudinals—there is no other longitudinal sculpture than the fine scratch-like lines of growth. Spirals—toward the bottom of each whorl is a row of about twelve round, blunt-tipped, rather prominent tubercles, which form an angulated keel where otherwise there is no carination; there is also a slight blunt keel round the base: the surface is covered with very obsolete, rounded, flat threads. *Colour* polished glassy white, with a hyaline dun apex. *Spire* high, rather narrow, conical; its profile-lines little interrupted by the carinal tubercles. *Apex*: there are about two glossy, dun-coloured, globose, embryonic whorls; the extreme tip is rounded and slightly bent down on one side. *Whorls* 6, short, and of slow growth, with a longish, drooping, somewhat concave shoulder, angulated below the middle by the row of tubercles, and slightly contracted into the inferior suture. The base, which is a good deal contracted, is conical, and runs out into a fine longish snout. *Mouth* club-shaped, being somewhat pointedly rhomboidal above, with a longish canal below. *Outer lip* thin, with a pretty regular convex curve, which is flattened at the summit, and prolonged in a straightish line at the canal; on leaving the body it retreats at once, leaving a very small shelf above the sinus, which is shaped like an open U with

[1] φαίαχρος, dun-tipped.

diverging margins: toward the lower part of the mouth the lip runs out in a pinion-shaped projection, retreating thence to the point of the pillar. *Inner lip* thin and narrow, little concave, with a long sharp-edged truncation of the point of the pillar. H. 0·18 in. B. 0·08. Penultimate whorl, height 0·03. Mouth, height 0·08, breadth 0·03.

The only specimen of this beautiful little species is not full-grown. It is broader in form and finer in the apex than *Pleurotoma bolbodes*, Wats., or any other member of that group, among which it most resembles perhaps *Pleurotoma stirophora*, Wats. Possibly in a more developed condition it may in form approach more nearly to *Pleurotoma fluctuosa*, Wats., from which its sculpture entirely removes it.

45. *Pleurotoma* (*Bela*) *dyscrita*,[1] Watson (Pl. XXIII. fig. 8).

Pleurotoma (*Thesbia*) *dyscrita*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 448.

Station 23. March 15, 1873. Lat. 18° 24′ N., long. 63° 28′ W. Off Sombrero Island, West Indies. 450 fathoms. Pteropod ooze.

Shell.—Thin, white, narrowly oblong or fusiform, with a longish, scarcely tumid body-whorl, a shortish, conical, convexly whorled, small-pointed, shallow-sutured spire, and a long conical base. *Sculpture:* Longitudinals—there are delicate thread-like curved lines of growth, which are strongest near the top of the whorls. Spirals—the whole surface is equably covered with fine, faintly raised, rounded threads; they are slightly fretted by the longitudinals; between them are little rounded furrows of about twice their breadth. *Colour:* the spiral threads are porcellanous, the furrows translucent white, and the surface is a little glossy. *Spire* rather short, conical, but slightly concave, with hardly any interruption in its profile-lines by the very slightly impressed suture and the convexity of the whorls. *Apex* consists of 2½ rounded subcylindrical whorls rising to a small rounded point, where the extreme tip hardly projects and is bent down on one side; it is smooth and glossy, but retains traces of a ruddy epidermis with minute spiral threads. *Whorls* 6 in all, of regular but rapid increase, rather high and broad, convex, but sloping, and not tumid; the last is very long and full, though not tumid; and there is little contraction on the long conical base. *Suture* slightly impressed, rather oblique. *Mouth* large, open, and oblong, pointed above, scarcely contracted below, but truncated at the end of the broad open canal. *Outer lip:* very equably curved in both its planes; it has a somewhat high and prominent shoulder above, between which and the body-whorl lies the rather deep, wide, rounded sinus. *Inner lip:* there is a thin glaze on the body and on the long pillar, which is cut off in front with a long, thin, twisted, oblique edge. H. 0·35 in. B. 0·16. Penultimate whorl, height 0·8. Mouth, height 0·22, breadth 0·08 (?).

[1] δύσκριτος, of difficult determination.

This beautiful little shell, though enclosed in a small glass tube, was found sadly broken, so that the measurement of the breadth of the mouth is somewhat doubtful. It is very like *Pleurotoma fragilis*, Reeve; but in that species the spirals are stronger and more remote, and the longitudinals much sharper. *Clathurella magellanica*, Phil., is even liker, but is a much stronger shell, has a shorter mouth, below the suture the upper whorls are contracted and are not so equably rounded; the apex in that is a little larger, the spirals are more regular, are waved, and are not so much raised, and the longitudinals are much fainter. In *Clathurella supercostata*, E. A. Sm., the upper whorls are ribbed. What it most resembles, however, is the *Bela* (?) *expansa* of G. O. Sars, who kindly compared the two species and sent me his unique specimen for examination. That is a much longer and narrower shell, of much faster increase, larger in the apex, and higher and narrower in each corresponding whorl; the whole spire is thus much more elongated, and the last whorl is very much less tumid; the shell, too, is thicker, and the whole style of sculpture coarser. In the same length it has about one whorl less. The curve of each of the whorls is more tumid; and as each slopes down to the straighter suture, it slowly and slightly contracts.

46. *Pleurotoma* (*Bela*) *climakis*,[1] n. sp. (Pl. XXVI. fig. 7).

Station 106. August 25, 1873. Lat. 1° 47′ N., long. 24° 26′ W. Mid Atlantic. 1850 fathoms. Globigerina ooze. Bottom temperature 36·6°.

Shell.—High and narrow, scalar, carinated, finely ribbed, spiralled, with a small body-whorl, contracted rounded base, an insignificant and unemarginated snout, scarcely any canal, and a strongly marked suture. *Sculpture:* Longitudinals—there are numerous, narrow, raised, round-topped, distant, quite straight ribs, more or less tubercled. Of these there are about 20 on the last whorl, and about 15 on that which precedes: one, more or less imperfect, is occasionally intercalated between the others; they are crowned round the shoulder of the shell and to some extent elsewhere with small round tubercles; in the broad hollows between these ribs there are fine lines of growth. Spirals—immediately below the suture there is a tubercled thread; on the spire this thread is a strong feature, but towards the mouth it becomes in every way weaker; below this there is a sloping shoulder, the edge of which is occupied by a flat narrow thread, and forms an angulated keel tipped with small round tubercles; below the keel the shell becomes nearly cylindrical, with a very slight constriction in a furrow lying between the keel thread and the first of some 17 or 18 flat threads parted by narrow flat furrows which occupy the whole of the lower part of the shell; of these there are about 6 on the penultimate whorl. Each of all these threads in crossing the fine ribs tends to rise into a squarish tubercle. *Colour* white, under a thin, persistent, glossy, yellowish membranaceous epidermis. *Spire* high, narrow, conical, scalar. *Apex* much broken. *Whorls:* 5 remain; they are cylindrical, and shortly shouldered above; the last is small and short, but a very little tumid, with a short rounded base and a small short squarish snout, the point of which is not emarginated. *Suture* linear,

[1] κλιμακίς, a little ladder, so called from its scalar form.

waved, distinct, lying in the broad open angulation in which the whorls meet. *Mouth* elongately oval, pointed above and below, slightly oblique. *Outer lip* thin, curved, with an angulation at the shoulder where the very feeble sinus occurs. *Inner lip* spreads thinly but a little broadly on the body; it is concave above and straight down the slightly channelled pillar, which is a little truncate, with its blunt-edged, slightly twisted point. H. 0·67 in. (?) B. 0·28. Penultimate whorl, height 0·14. Breadth of first remaining whorl 0·08. Mouth, height 0·29, breadth 0·15.

This species belongs to the large group of northern forms which gather round *Pleurotoma* (*Bela*) *turricula*, Mont, and especially resembles *Pleurotoma* (*Bela*) *nobilis*, Möller, but is higher and narrower, with a shorter smaller body-whorl, a much shorter and quite unemarginated snout; the details of sculpture, too, are quite different.

47. *Pleurotoma* (*Typhlomangelia*) *pyrrha*,[1] Watson (Pl. XXV. fig. 6).

Pleurotoma (*Drillia*) *pyrrha*, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 409.

Station 233. May 17. Lat. 34° 39′ N., long. 135° 14′ E. Kobi, Japan. 8 fathoms. Mud.

Station 233A. May 19, 1875. Lat. 34° 38′ N., long. 135° 1′ E. Kobi, Japan. 50 fathoms. Yokohama, Japan. Sand.

Shell.—High, narrow, conical, with a longish, somewhat contracted, conical base running out into a largish snout, obliquely ribbed, and covered with spiral threads; the suture is slightly constricted. *Sculpture:* Longitudinals—there are on the last whorl 13, on the first regular whorl 8, oblique, rounded ribs, which are obsolete at the top of the whorls, extend to the lower suture, but die out on the base; they are parted by shallow rounded furrows, rather wider than they are: the lines of growth are harsh and numerous. Spirals—at the top of each whorl is a slight swelling,[2] carrying two stronger and many feebler flat spiral threads. The sinus-area is scored by fine, but irregular, spiral threads. The whole of the rest of the surface is covered by rounded spiral threads, which are alternately stronger and finer; on the snout the finer ones disappear, and the stronger ones become sparser; the three highest of the stronger ones rise into slight knots on the ribs. Besides all these, the whole surface is delicately and regularly scratched microscopically. *Colour* porcellanous white, very much stained in the interstices of the ribs, and especially on the larger spiral threads, with tawny or light-chestnut colour, which is also seen on the point of the pillar and canal. *Spire* high and conical, its profile-lines somewhat broken by the angular prominence of the ribs and by the rounded constriction of the suture. *Apex* broken. *Whorls* 10 (remaining), of regular rather rapid increase, short, contracted above, expanding below, angulated by the projection of the ribs, but

[1] πυῤῥός, tawny.

[2] These do not appear in the figure, in which, too, the longitudinal ribs are too crowded.

otherwise scarcely convex. The last is small, contracting from the top of the ribs, slightly constricted on the base, with a largish conical snout, which is slightly bent to the left, and is very unequal-sided; the point is scarcely reverted. *Suture* linear, lying in a very slight groove, but strongly defined by the marginal swelling below, and by the contraction of the profile-lines above. *Mouth* buff and white-coloured within, rather small, pear-shaped, angulated at the upper point, and prolonged into the rather wide and open canal below. *Outer lip* is very slightly concave above, freely convex in the middle, and straight at the canal. It is hardly patulous; the line of its edge advances straight at first, then retreats, forming a rather large, shallow, open, rounded sinus, from which it runs out rather slowly into a projecting curve, scarcely retreating till it reaches the end of the canal. It is thin throughout. *Inner lip* is smoothly excavated in the thickness of the shell and is rather broad; in its direction it is shortly and slightly concave above, scarcely oblique and quite straight on the pillar, the point of which is obliquely truncated with a sharp twisted edge. H. 1·2 in. B. 0·45. Penultimate whorl, height 0·19. Mouth, height 0·5, breadth 0·21.

This species belongs to that large and variable group which gather round the *Pleurotoma griffithii*, Gray, the synonymy and individual species of which alike require revision. When the group obtains this revision, it is very possible that the Challenger species, and not a few others, will be reckoned as mere varieties. In the meantime I cannot unite it to any species I know. It has a much smaller body-whorl than *Pleurotoma griffithii*, Gray. Compared with *Pleurotoma zonata*, Gray, the sculpture and the proportion of height to breadth throughout the whorls are very different, the growth is shorter, and the pillar has not the twisted band at the point. It is much smaller than *Pleurotoma kaderleyi*, Lischke, from Japan; is also narrower in proportion, and is differently banded. Than *Pleurotoma lanceolata*, Reeve, which is also a Japanese species, *Pleurotoma pyrrha* is much stumpier; it has spirals on the whole surface, not excepting the ribs (a characteristic feature on which v. Martens dwells in his admirable figure and description of Reeve's species in the Conch. Mitt., vol. i. p. 39, pl. viii. fig. 4); it has a much larger and proportionally much shorter mouth. Of course if it prove to be a young shell, some of these differences would be accounted for.

It has some resemblance to *Pleurotoma paretoi*, Mayer (Journ. de conch., 1868, p. 110, pl. iii. fig. 2), an Upper Tertiary fossil from Piedmont, but is much thinner, somewhat stumpier, with a smaller apex and more tumid body-whorl.

48. *Pleurotoma* (*Typhlomangelia*) *paupera*, Watson (Pl. XXV. fig. 3).

Pleurotoma (*Drillia*) *paupera*, Watson, Prelim. Report, pt. 8, Journ. Linn. Soc. Lond., vol. xv. p. 411.

Station 191. September 23, 1874. Lat. 5° 41′ S., long. 134° 4′ 30″ E. Arrou Islands. 800 fathoms. Green mud. Bottom temperature 39°·5.

Shell.—Fusiform, biconical, shortly sometimes feebly ribbed, smoothish, with a slightly constricted suture, of a yellowish-buff colour. *Sculpture:* Longitudinals—above the

middle of each whorl is a row of tubercles, which stand out on the upper whorls rather sharp and rounded, but on the lower whorls are elongated into slight, oblique ribs, which tend to become obsolete on the last whorl, and do not extend to the base. They are parted by shallow rounded furrows, which are a good deal broader than the ribs. There are about thirteen of these on each whorl; they do not extend in the least to the sinus-area above the tubercles. The surface is very closely scored with coarsish lines of growth. Spirals—the line of the tubercles forms a rather acute carination, of which there is hardly a trace in the curve of the whorls themselves. The whole surface is covered with harsh, unequal, irregular, flatly rounded threads, which are cut into small coarse granulations by the lines of growth; this sculpture is most developed on the base and snout, less so in the sinus-area, least so of all on the rib-area. *Colour* buff below the yellow epidermis, which is coarse and harsh, but not thick; the surface of the shell below it is smooth and free from the granulated texture, but is curiously reticulated by minute interrupted wrinkles, whose course is at right angles to the lines of growth. *Spire* high and conical; its profile-lines are little interrupted by the contraction of the suture. *Apex* eroded in all the specimens. *Whorls* 10 to 11(?), of regular, rather rapid increase, shortish, with a largish, sloping, but hardly concave shoulder above and a very slight contraction below. They are angulated by the projection of the line of tubercles, but are otherwise little convex; the last is a little tumid and considerably elongated, a little contracted on the base, and gradually drawn out into the conical, straight, longish, and at the end smallish snout. *Suture* rather deep, and strongly marked by the angle at which the superior and inferior whorls meet. *Mouth* buff-coloured within, rather long and narrow, pear-shaped, pointed above, with a longish, broad, and open canal below: the direction is very little oblique. *Outer lip* curves pretty equally from its origin to the edge of the canal, from which to the point of the snout its course is nearly straight: on leaving the body it retires at once, but very slightly and regularly, so as to form the shallow and openly rounded sinus, from which it advances with a long and regular sweep to the front of the mouth, and then curves slowly backward to the point of the snout: it is thin throughout; above it is straight, but lower down a little patulous. *Inner lip* spreads rather broadly across the pillar, highly polished, buff-coloured, with a slightly raised edge; it is very little concave above, straight but rather short on the pillar, which is cut off to a long fine point, with a blunt, rounded, very slightly twisted strongish edge. H. 1·75 in. B. 0·68. Penultimate whorl, height 0·26. Mouth, height 0·85, breadth 0·45.

This species has a vague general resemblance to *Pleurotoma sanctijohannis*, E. A. Sm., from Japan; but that is not ribbed, and has a much longer mouth. Judging by the figures (see Lischke, Japan. Meer. Conch., pt. 3, p. 22, pl. i. fig. 1, and Weinkauff, Conch. Cab. (ed. Küster), p. 51, pl. xi. fig. 5), it is a good deal like *Pleurotoma kaderleyi*, Lischke, but is smaller, considerably less elongated, and very different in colour. It has a very considerable resemblance to two Eocene Pleurotomas, viz.; *Pleurotoma selysii*, Koninck, and *Pleurotoma nodulosa*, Lam., between which it occupies

somewhat of an intermediate place. Than *Pleurotoma selysii* it is stumpier in the spire, shorter in the pillar, and, especially in the upper whorls, more angulated. Than *Pleurotoma nodulosa* it is much larger, each whorl is much higher, the body-whorl is much longer and narrower, and, especially in the young shell, is much more contracted in the base.

49. *Pleurotoma* (*Typhlomangelia*) *fluctuosa*, Watson (Pl. XXV. fig. 4).

Pleurotoma (*Drillia*) *fluctuosa*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 416.

Station 151. February 7, 1874. Lat. 52° 59′ 30″ S., long. 73° 33′ 30″ E. Heard Island. 75 fathoms. Volcanic mud.

Var. *cariosa*, Watson.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Shell.—High, broadish, conical, with a shortish conical base, a slight angulation near the top of the whorls, very oblique ribs, rather thin, white. *Sculpture:* Longitudinals—below the sinus-area narrow, close-set ribs make their appearance so abruptly as almost to count for tubercles; they bend very obliquely[1] to the left, and correspond with the lines of growth with which the surface is closely puckered; on the base they coalesce and become faint, disappearing wholly on the snout. There are twenty-three on the last whorl; in number, but hardly in size, they diminish up the spire rapidly; the hollows between them are about as broad as the ribs. Spirals—in the sinus-area, and between the ribs where the epidermis is preserved, there are fine, sharp, close-set, minute, hair-like threads, somewhat fretted by the lines of growth; on the summit of the ribs these also appear, reticulating the surface, but are less distinct; below the sinus-area there is an angulation arising almost entirely from the prominence of the rib-ends. *Colour* dull porcellanous white below the pale yellowish-grey epidermis, which is easily rubbed off all the prominent parts of the shell. *Spire* conical, but with its profile-lines much broken by the contraction at the sutures; its upper part is small and rather cylindrical. *Apex* globose, round, comprising two embryonic whorls, the extreme tip of which is somewhat obliquely flattened down. *Whorls* 8 to 9, rather short, the last a little ventricose; between the suture and the angulation they are a little hollowed; below the angulation the profile-line is convex with a slight contraction into the suture, so that the breadth at the angulation and at the suture is equal. The last whorl contracts rather rapidly on the slightly convex base into a short conical snout, which on the right is so obliquely truncated that it hardly projects, the curve of the outer lip passing on almost without interruption to the point of the pillar. *Suture* distinct, both from the curve of the whorls and from being itself a little impressed. *Mouth* obliquely oval, pointed above, and with a short broad canal

[1] This does not appear in the figure.

below. *Outer lip* thin; in the sinus it is slightly thickened and very shortly reverted; in its course it forms a semicircular curve, a little contracted inwards in the middle, but slightly patulous at the canal. It scarcely retreats in the slightest degree at the sinus, which is round, open, shallow, and close to the body; below it the lip-edge advances with a considerable sweep to the edge of the base, from which point it curves backwards to the canal; there the edge is thin and patulous but not reverted. *Inner lip* is thinly excavated in the substance of the shell, and is very narrow; concave above, it advances straight down the shortish, conical, small, but strong-pointed pillar, which has a narrow, but blunt, and scarcely twisted edge. *Operculum* small, triangular, with a blunt terminal apex; it is pale straw-coloured, and is slightly corrugated with unequal furrows following the lines of growth, some of which lines on the pillar-margin are slightly laminated. H. 0·9 in. B. 0·36. Penultimate whorl, height 0·16. Mouth, height. 0·4, breadth 0·19.

In general form this is like *Pleurotoma studeriana*, v. Mart., from Kerguelen; but the breadth of the whorls lies at a much higher point in each, the concave furrow below the suture is wanting in that species, the ribs here are finer and sharper, more crowded and more oblique, and the apex is smaller and more cylindrically prominent. *Pleurotoma patagonica*, v. Mart., is also similar; but in that the snout is much narrower and longer, the sinus is deeper and more remote from the suture; the ribs, which in form are similar, are shorter, much less oblique, and die out on the penultimate whorl; and the whole surface is much more strongly cancellated. In sculpture and form of sinus it is somewhat like *Pleurotoma fuegensis*, E. A. Sm. In the specimen from Station 149D, which I attribute to a var. *cariosa*, the concave furrow below the suture is almost absent, and the aspect of the shell is somewhat different; but both these features are perhaps a mere deception of the eye caused by the rubbing down of the ribs, which are much wasted.

50. *Pleurotoma* (*Typhlomangelia*) *lithocolleta*,[1] Watson (Pl. XXIV. fig. 6).

Pleurotoma (*Typhlomangelia*) *lithocolleta*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 441.

Station 23. March 15, 1873. Lat. 18° 24′ N., long. 63° 28′ W. Off Sombrero Island, West Indies. 450 fathoms. Pteropod ooze.

Shell.—High, narrow, conical, with a short base and a blunt apex, bluntly angulated and tubercled, thin, smooth, ivory-white. *Sculpture:* Longitudinals—there are none but very fine scratch-like lines of growth; behind and parallel to the lip-edge there are three narrow sickle-shaped ribs, which are probably an accidental feature. Spirals—very slightly above the middle of the whorls runs a feeble angulation set with round but a little narrowed and obliquely elongated knobs, of which there are about 12 on each whorl; on the first regular whorl there are about 10; before the end of the penultimate they have

[1] λιθοκόλλητος, gemmed.

quite died out, and even the angulation of the whorl tends to disappear. There are faint traces of microscopic spirals over the whole shell, rather in the texture than on the surface; these are rather more distinct below the suture; and in the sinus-area there are two faint impressed lines. *Colour* polished ivory-white. *Spire* high, narrow, conical. *Apex:* the $2\frac{1}{2}$ embryonic whorls are cylindrical, quite smooth, and have the extreme point very much flattened down on one side so as to make a perfectly rounded tip. *Whorls* $11\frac{1}{2}$ in all; they are rather short, and of very regular increase, slightly convex, but not contracted either above or below; the last is very slightly tumid with a rounded base, contracting very rapidly to a short broad snout, which is abruptly truncated at the point. *Suture* rather oblique, fine, regular, defined by a slight impression: it rises a very little at the mouth. *Mouth* pear-shaped, small, narrow, little contracted in front. *Outer lip* somewhat thickened, with a small reverted edge in the sinus and at the point of the canal, but sharp and a little contracted in all the rest of its extent; it leaves the body at a slightly acute angle, and retreats at once obliquely, but very shortly, to form the narrow rounded sinus, from which, almost parallel to the line of the suture (*i.e.*, with a very slight oblique direction forwards), it sweeps far out in a great convex-edged wing, retreating again a little to the edge of the very short canal, where it turns slightly and obliquely forwards; the point of the canal is open, and cut off obliquely from the right forwards to the point of the pillar. *Inner lip:* a thin porcellanous glaze, a little thickened at the top, spreads narrowly on the body, which is a good deal excavated; the pillar is straight, short, conical, very little truncated, with a slightly twisted and sharpish edge, and a pretty solid though fine point at the extreme front of the shell. H. 0·65 in. B. 0·23. Penultimate whorl, height 0·1. Mouth, height 0·22; breadth 0·1.

In style of ornamentation this singularly beautiful species somewhat resembles *Pleurotoma syngenes*, Wats.; but the differences are so obvious as not to need mention. I do not know any species with which to compare it. *Pleurotoma modiolus*, Jan (*Fusus*) = *Pleurotoma carinata*, Biv. has some resemblance; but that is a coarser and broader shell, and has the mouth much larger.

51. *Pleurotoma* (*Typhlomangelia*) *lincta*, Watson (Pl. XXII. fig. 11).

Pleurotoma (*Rhaphitoma*) *lincta*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 442.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—High, narrow, conical; with a blunt round apex, and a short and very contracted base, ribbed, polished ivory-white. *Sculpture:* Longitudinals—there are on the last whorl 11, on the first 9, very short ribs (or elongated tubercles) which do not extend to either suture; they are rounded on the top, are parted by broad rounded furrows, and

run obliquely forward from right to left; they sometimes extend to the base: besides these, there are only slight hair-like lines of growth. Spirals—the prominence of the tubercles forms an angulation at about one-third of the whorl's height above the suture; there are sometimes a few flatly rounded and feeble threads on the snout. The surface is very delicately microscopically scratched. *Colour* ivory-white and highly polished. *Spire* high, narrow, conical, with profile lines slightly interrupted by the projection of the tubercles. *Apex* consists of $2\frac{1}{4}$ embryonic whorls, which are small, globose, and flatly rounded at the tip. *Whorls* 10, short, angulated, but only by the prominence of the tubercles, which also gives the appearance of a sutural contraction; the last is small, with a rounded, very abruptly contracted, conical base, prolonged into a small, prominent snout, which is almost imperceptibly bent backward. *Suture* linear, but well marked from the profile-lines of the whorls above and below meeting at a slight angle. *Mouth* pear-shaped, angulated above, and a little produced below. *Outer lip* very regularly curved, but straight along the canal, a little contracted in the middle: on leaving the body it does not immediately bend to the right, thus leaving a narrow but well-marked shelf along the whole upper edge of the rather deep, narrow, rounded sinus, below which it advances into a high-shouldered pinion: it scarcely retreats below this till close to the point of the snout. *Inner lip* is very narrow; it is scarcely convex on the body, and is somewhat angular at the base of the conical pillar, down which it runs with a somewhat thickened, reverted, and prominent edge defined by a small furrow; it is scarcely cut off obliquely in front with a narrow, thickened, rounded edge. H. 0·46 in. B. 0·16. Penultimate whorl, height 0·07. Mouth, height 0·18, breadth 0·07.

This species a good deal resembles *Pleurotoma micans*, Hds., but is a much narrower form, with a higher and finer spire, more numerous whorls, and is not merely tubercled, but has its tubercles prolonged into ribs. Than *Pleurotoma pudica*, Hds., it is longer, narrower, with a deeper suture, a shorter canal, and a much blunter apex. *Pleurotoma sigmoidea*, Bronn, is broader, the whorls are longer, the apex is blunter, the body-whorl is much longer, and that species has no open constriction below the suture.

52. *Pleurotoma* (*Spirotropis*) *studeriana*, v. Martens (Pl. XXV. fig. 7).

Pleurotoma studeriana, v. Martens, Sitzungsbericht der Gesellsch. Naturforsch. Fr. Berlin, Feb. 1878, p. 22.
" " v. Martens, Conchologische Mittheilungen, vol. i. p. 37, pl. viii. fig. 2.
" " Studer, Fauna Kerguelensland, Archiv Naturgeschichte, 35th year, 1st vol. p. 136.
Drillia studeriana, Tryon, Manual, vol. vi. p. 209, pl. xiii. fig. 48.

Station 149B. January 17, 1874. Lat. 49° 28′ S., long. 70° 30′ E. Kerguelen Island, near entrance to Royal Sound. 25 to 30 fathoms. Volcanic mud.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Kerguelen Island, Royal Sound. 28 fathoms. Volcanic mud.

Habitat.—Kerguelen in 120 fathoms, on a rocky bottom (Studer).

Professor v. Martens, whose admirable figure is reproduced here, has confirmed my identification of the species and also of a variety of it obtained by the Challenger. In both of these, particularly on the base, a few faint and irregular spiral threads exist besides those referred to by him in the sinus-area; though somewhat faint, they are also to be found on his specimens. One of the spirals on the base forms a very slight angulation or keel. The operculum, which Professor v. Martens does not mention, like that of many of these frigid Pleurotomas, is pale yellow, thin, oval, slightly pointed below, where, on the outside face, as often, is the minute slightly elevated nucleus in shape like a finger-nail; from this the numerous fine lines of growth returning upon themselves form oval loops. These lines, as usual, are a little stronger and more crowded on the pillar edge.

53. *Pleurotoma* (*Spirotropis*) *aganactica*,[1] n. sp. (Pl. XXVI. fig. 8).

Station 133. October 11, 1873. Lat. 35° 41′ S., long. 20° 55′ W. Mid-Atlantic. 1900 fathoms. Globigerina ooze. Bottom temperature 35°·4.

Shell.—Thin, long, narrow, white, feebly double-keeled, spiralled, with a short rounded base, broad, short, lop-sided snout, high conical spire, and slightly angularly impressed suture. *Sculpture:* Longitudinals—nothing but lines of growth in slight puckerings. Spirals—with the exception of the subsutural area, the surface is scored with slight broadish threads with feeble furrows. Two of the threads stronger than the rest, and about $\frac{1}{10}$ in. apart, lie at the periphery, and form a blunt double-keel on the whorls; under the lower one and within the contraction of the base is another thread not quite so strong as either of these two. *Colour* white, but the shell is very much weathered. *Spire* tall and conical. *Apex:* all the upper whorls of the spire are gone. *Whorls:* only $3\frac{1}{2}$ remain; the last is small, but is a little tumid, with a short rounded base and a very short lop-sided snout. *Suture* rather oblique, well marked by the angulation of the whorls and by a slight contraction of the whorl just above. *Mouth* elongately oval, rather small. *Outer lip* thin, well arched; the sinus is strong, but very open; it lies near the suture with a triangular shelf above it. *Inner lip* spreads with a broad thin glaze on the body; its line is concave; the pillar is short, slightly oblique, and is shortly cut off, with a slight twist at the point. H. 1 in. B. 0·48. Penultimate whorl, height 0·22. Breadth of first remaining whorl, 0·18. Mouth, height 0·48, breadth 0·29.

The solitary specimen of this species has been grievously fretted by an *Actinia*, and is indeed but a fragment, not less than 5 or 6 whorls having perished, and the surface of the shell being much destroyed.

[1] *αγαναχτικός*, easily fretted, as weak and thin.

54. *Pleurotoma* (*Spirotropis*) *brachytona*,[1] Watson (Pl. XVIII. fig. 3).

Pleurotoma (*Drillia*) *brachytona*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 415.

Station 191. September 23, 1874. Lat. 5° 41′ S., long. 134° 4′ E. Off the Arrou Islands, south-west of Papua. 800 fathoms. Green mud. Bottom temperature 39°·5.

Shell.—Short and broad, biconical, angulated, thin, with small oblique riblets and spiral threads, and with a lop-sided, small-pointed snout. *Sculpture:* Longitudinals—on the last whorl there are about twenty small, short, oblique riblets, which are obsolete on the base; they are parted by shallow furrows somewhat broader than they: they are more numerous and sharper on the upper whorls, where they occupy the whole lower third of each whorl. Immediately below the suture there is a minute collar of very small, short, sharp, irregular puckers with intervals of twice their own breadth: springing from these puckers and coinciding with the riblets are hair-like lines of growth, slightly stronger than the other growth lines which closely cover the whole surface of the shell. Spirals—there is a slight collar at the top of the whorls, which forms a very minute and irregular shelf on the underside of the suture; about two-thirds down the whorls is a blunt angulation where the longitudinal riblets rise. Besides these, there are on the whole surface flatly rounded threads which are broad, coarse, and irregular on the base, crowded and narrow at the keel, broader, but faint and more regular, on the shoulder. *Colour* alabaster-white. *Spire* irregularly conical. *Apex* eroded. *Whorls* 8, making allowance for the eroded apex; they have a long, sloping, slightly concave shoulder, a blunt angulation about two-thirds down, and below this are nearly cylindrical: the fifth whorl enlarges somewhat disproportionately; and the last whorl is swollen, with a sharper angulation than the rest; the base is convexly conical, and is produced into a lop-sided, centrally situated, small-pointed snout. *Suture* small but distinct, being slightly channelled by the minute horizontal shelf formed by the edge of the infrasutural collar: there is a very slight contraction of the whorls into it. *Mouth* rather small, rhomboidally pear-shaped, being pointed above, prolonged into the rather short and broad canal below, and having a blunt angulation in the outer lip and at the base of the pillar. *Outer lip* very thin: it is somewhat rectilinearly curved; its edge, on leaving the body, retreats immediately to form the shallow rounded open sinus which occupies the shoulder below the suture. Below this it advances with a long oblique forward slope in the line of the riblets, and then, from about the middle, retreats on a very regular curve to the point of the pillar. *Inner lip* is a thin glaze with a defined edge; it is very narrow on the body, but spreads round the pillar; it is convex on the body, with a bluntly angular concavity at the base of the pillar, which is short, small, conical, unequal-sided, obliquely cut off in front, with

[1] βραχύτονος, short.

a narrow rounded twisted edge. H. 0·61 in. B. 0·3. Penultimate whorl, height 0·1. Mouth, height 0·31, breadth 0·19.

This is a peculiar form, stamped essentially with the characteristics of a frigid-water species.

55. *Pleurotoma* (*Spirotropis*) *bulbacea*, Watson (Pl. XXV. fig. 9).

Pleurotoma (*Drillia*) *bulbacea*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 418.

Station 169. July 10, 1874. Lat. 37° 34′ S., long. 179° 22′ E. North-east from New Zealand. 700 fathoms. Blue mud. Bottom temperature 40°.

Shell.—Broadish, conical, sharply keeled, strong, porcellanous, with a shortish contracted base, a short snout, short narrow ribs, spiral threads, and a bulbous apex. *Sculpture:* Longitudinals—below the sinus-area and about one-third down the whorl from the suture arise, not quite abruptly, ribs slightly tubercled at the top, straight, direct, narrow, and parted by shallow furrows about twice their breadth; they become feeble toward the lower suture; on the last whorl they do not continue to the base, and become broader and weaker toward the mouth: there are eleven on the last and penultimate whorls; on the first infra-embryonic whorl there are about seventeen, crowded, sharp, scarcely curved and oblique. The lines of growth are numerous and unequal; in the sinus-area they are sharp and delicate, on the rest of the shell coarse and puckered. Spirals—marginating the suture at the top of each whorl is a narrow scarcely swollen band; below this the sinus-area is very finely, almost microscopically, scratched; and this scratch-sculpture is continued, though less distinctly, on the rest of the surface. The projection of the top of the ribs forms a sharp keel. The rib-area is crossed by five coarsish threads, which rise into small tubercles on the ribs; one or two smaller threads come in between the lines of these spirals. The same sort of threads, but less distinct, are found on the base; those on the pillar and snout are a little more distinct. *Colour* dull porcellanous white. *Epidermis* quite gone. *Spire* rather short, conical, very slightly scalar, cylindrical toward the top. *Apex* two smooth embryonic whorls, swollen and roundedly pressed down, with a deepish suture, rather more prominent than the regular whorl which follows. *Whorls* $6\frac{1}{2}$, short, of rather rapid increase; the last large relatively to the rest; from the suture to the ribbing they are concavely shouldered. The projection of the tubercles at the top of the ribs forms a carination, which does not really exist in the form of the whorls themselves; there is a very slight contraction towards the lower suture. The last whorl contracts slightly from the keel to the edge of the base, and from that point rapidly to the small, narrow, straight, and direct snout. *Suture* coarse, slightly impressed, and well defined by the band below it. *Mouth* narrowly oval, pointed above, with an oblique, short, rather open and gradually contracted canal in front. *Outer*

lip a rather depressed convex curve, a little concave at the top and flattened toward the point: on leaving the body it retreats at once, forming a shallow, blunt V-shaped sinus, from the lower side of which, with little of angulation, it advances very straight to the edge of the canal, whence it slowly curves backward round the open point of the snout. *Inner lip* spreads as a very narrow porcellanous glaze; it runs very obliquely to the base of the shortish narrow pillar, below which point it is a very little hollowed. The point of the pillar is cut off with a very slight obliquity, and has a blunt and very slightly twisted edge. *Operculum* small, oval, smooth, with hair-like striæ, apex terminal, colour pale brownish yellow. H. 0·5 in. B. 0·23. Penultimate whorl, height 0·1. Mouth, height 0·24, breadth 0·12.

The blunt apex, the ribs, and coarse spirals of this species suggest some faint affinity with the *Pleurotoma nivalis*, Lovén, group; but it is very remote.

56. *Pleurotoma* (*Spirotropis*) *stirophora*,[1] Watson (Pl. XXII. fig. 3).

Pleurotoma (*Drillia*) *stirophora*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 422.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—High, narrow, angulated, obsoletely ribbed, tubercled, thin, polished, flinty white, with an elongated conical base, longish pillar, and a blunt apex. *Sculpture:* Longitudinals—the lower half of the whorls is crossed by obsolete, rounded, oblique, straight ribs, with very slight rounded depressions between; there are about 12, of increasing indistinctness, on the last whorl, and 9 on the first regular whorl; they take their origin in a row of small, round, sharpish tubercles; they do not extend to the base. The lines of growth are faint sharpish scratches, and are quite independent of the ribs. Spirals—a little above the middle each whorl is angulated and carinated, the carinal thread being set with small, sharpish-pointed tubercles, in which the longitudinal ribs originate. The sinus-area is smooth; the rest of the surface is marked by very obsolete, depressed, rounded threads. *Colour* greyish transparent white. *Spire* high, narrow, conical; its profile-lines but little interrupted by the broad, shallow, sutural depression which extends from keel to keel of the successive whorls. *Apex* consists of nearly 2 embryonic whorls, which are cylindrical, quite smooth, and end in a perfectly rounded tip, which is slightly immersed, and scarcely, if at all, oblique. *Whorls* 7, short, and of slow increase; they are angulated above the middle, with a drooping, scarcely hollowed shoulder above, and a very slight contraction of their straight line below; the last is small, rapidly contracted on the conical base, and running out into a somewhat one-sided, and slightly twisted, narrow, longish

[1] στιρροφόρος, keeled.

snout. *Suture* little oblique, linear, a little disturbed by the longitudinal ribs; well defined by the superior and inferior slope of the whorls. *Mouth* club-shaped, oval above, with a longish, open, rather oblique canal. *Outer lip* thin, with a flattened, convex curve, which is steepish at the shoulder and elongated at the canal; on leaving the body it sweeps at once backwards, leaving a very narrow shelf between the body-whorl and the sinus, which is rounded, rather shallow and open, but large, from the very considerable forward sweep of the pinion-like edge of the lip as it approaches the canal, from which it retreats toward the point of the shell. *Inner lip* is a thinly glazed, narrow, slightly depressed area; it is very slightly hollowed at the base of the longish finely conical pillar; the point of the pillar is cut off with a long-drawn obliquity, and has a fine, slightly twisted edge. H. 0·3 in. B. 0·1. Penultimate whorl, height 0·05. Mouth, height 0·13, breadth 0·06.

This species resembles *Pleurotoma* (*Surcula*) *syngenes*, Watson, in general character of its whorls and style of its sculpture; but its longitudinal ribs are a marked feature of difference. It is, besides, a much narrower shell, with a larger apex, a much smaller body, and a less contracted base with a much shorter pillar. Its weaker sculpture and slimmer form distinguish it at once from *Clionella lophoessa*, Watson. In shape it is very like *Pleurotoma ischna*, Watson, and *Pleurotoma* (*Surcula*) *bolbodes*; but these are in sculpture and in texture unlike it and one another.

57. *Pleurotoma* (*Spirotropis*) *tmeta*,[1] Watson (Pl. XIX. fig. 3).

Pleurotoma (*Drillia*) *tmeta*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 424.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—A mere fragment of two whorls, but with very marked features. It is evidently high and narrow, with short and numerous whorls, which are sharply but broadly angulated very much above the middle; the shoulder above the angulation is scored by very many sharp curved threads, the scars of the old sinus; the rise of these forms a collar below the suture, which is thus distinct. The angulation is raised into a keel by rounded tubercles, which are the origin of narrow, curved, very oblique ribs, of which there are twelve on the last whorl; they extend to the base, but not to the snout, which is very small and short. The whole surface is closely scored by fine, rounded, spiral threads. The sinus of the outer lip is separated from the body by a narrow shelf, and is shallow, rounded, and open on the under side, where the convex shoulder of the lip lies very low. The narrow inner lip has a small pad above, is rather oblique and concave in the middle; the front of the pillar is very slightly truncated obliquely, and has a sharply rounded and hardly twisted edge. The mouth is long, narrow, and oblique. H. (?) B. 0.128 in. Penultimate whorl, height 0·078. Mouth, height 0·14, breadth 0·039.

[1] τμητός, furrowed.

58. *Pleurotoma* (*Perrona*) *marmarina*,[1] Watson (Pl. XXIV. fig. 8).

Pleurotoma (*Perrona*) *marmarina*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 429.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Biconical, ribbed, barely tubercled, spirally furrowed, and compressedly banded below the scarcely impressed suture, with a high pointed spire, a short lop-sided base, and a very short snout. *Sculpture:* Longitudinals—there are on the last whorl 15 rather narrow, spread-out, rounded, scarcely oblique direct ribs, which begin at the upper suture and extend to the base, but not to the snout; near the top they are cut by a spiral furrow, so that the upper part of them forms a series of small rounded tubercles just below the suture; below the spiral furrow the ribs are slightly swollen into knots; the ribs are parted by wider shallow furrows: these ribs and furrows run pretty regularly down the spire; but there are fewer of them on the earlier whorls. The whole surface is further scored by almost microscopic regular hair-like lines of growth, which are specially sharp in the sinus-area. Spirals—there is a furrow near the top of the whorls, which constricts both the ribs and the interstices. On the last whorl there are 18 or 20 shallow and narrow furrows parted by flat interstices of about three times their width; these do not extend to the sinus-area, and only very doubtfully to the snout, where there are rather a few irregular and scarcely raised rounded threads: these furrows are not recognisable on the earlier whorls. The whole surface is very delicately fretted with almost microscopic, crisp spiral striæ, whose course is not quite regular, and which are crimped or disturbed by the lines of growth; this sculpture is particularly sharp and distinct in the sinus-area. *Colour* pure marble-white. *Spire* very regularly conical. *Apex:* there are about two embryonic whorls, which are small, nearly cylindrical, with scarcely appreciable suture, and end in a blunt, round, laterally flattened-down tip. *Whorls* 10 in all, rather short and broad, scarcely at all convex; the last is large, being broad and tumid, but not long, with a tumidly conical lop-sided base, ending in a short, broad, flat snout which is abruptly and cut off straight. *Suture* linear, but well defined by the swelling of the infrasutural row of tubercles. *Mouth* oval, with an acute angle above, an obtuse angle at the side where the body and pillar join, and a truncation at the point. *Outer lip* thin, a little patulous, with an equable convex curve throughout: the sinus is very shallow and round, with no shelf above it; and below it is a very high but little prominent shoulder made by the very slightly advancing lip-edge. *Inner lip* very narrow, shallowly hollowed into the substance of the shell; the pillar is straight, conical, and is obliquely cut off in front with a blunt, rounded, scarcely twisted edge. H. 0·66 in. B. 0·29. Penultimate whorl, height 0·12. Mouth, height 0·3, breadth 0·14.

[1] μαρμάρινος, gleaming like marble.

This singularly beautiful species is a form very difficult to connect with any of the groups of *Pleurotoma*. Its texture connects it with *Clavus*, to some of the less characteristic forms of which it approaches pretty closely, but it has neither the apex nor the thickened labium of the Drillias. Though I have put it with the Perronas, it does not really belong to that group, its sinus being far too near the suture. Compared, as regards its form, with *Pleurotoma sacra*, Reeve, which in a superficial way it resembles, it has no approach to an umbilical chink; the body is broader, the base more contracted, the spire more regularly conical and not at all convex; the individual whorls are much shorter, the sinus much shallower; the colour is pure white, not brown-banded; and the sculpture is deeper and less superficial.

59. *Pleurotoma* (*Thesbia*) *eritima*,[1] Watson (Pl. XXIII. fig. 2).

Pleurotoma (*Thesbia*) *eritima*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 443.

Station 135c. October 17, 1873. Off Nightingale Island, Tristan da Cunha. 100 to 150 fathoms.

Shell.—Very small, but hardly thin, oblong, spirally striated, with a long body-whorl, a rather high conical spire, a blunt round-pointed apex, and a short broad truncated snout. *Sculpture:* Longitudinals—there are exceedingly faint scratches in the lines of growth. Spirals—the whole surface is scored with fine narrow impressed furrows, which are about half the width of the raised interstices. *Colour* uniform pellucid ruddy brown, becoming paler towards the point of the snout. *Spire* rather high, but not small, conical, but with convex profile-lines. *Apex:* $2\frac{1}{4}$ embryonic whorls, which rise in a conically globose form to a blunt rounded point with the very small tip, which is immersed and bent down on one side. *Whorls* 5, slightly convex, rather short and broad except the last, which is long and narrow, having a produced, broad, and conical base, ending in a broad undefined snout. *Suture* very slightly impressed in consequence of a faint swelling of the superior and inferior whorls. *Mouth* oblong, pointed above, and broadly truncate below, at the end of the scarcely contracted canal. *Outer lip*, which is a little contracted above and a little patulous below, is a flat curve in both its planes; the edge projects into a small high-placed shoulder, between which and the body lies the shallow, open, rounded sinus, with a very minute, short, triangular shelf above it. *Inner lip:* there is a thin narrow glaze on the body and pillar; at the junction of these two there is a very slight concave curve; otherwise the line is very direct and is slightly oblique; the glaze does not extend quite to the point of the pillar, which is scarcely twisted or truncated. H. 0·12 in. B. 0·049. Penultimate whorl, height 0·03. Mouth, height 0·06, breadth 0·024.

[1] ἐρίτιμος, very precious.

This species conforms fairly to the type, *Columbella nana*, Lov., for which Dr Gwyn Jeffreys suggested the subgeneric name of *Thesbia* (see Brit. Conch., vol. iv. p. 359). I have followed Professor G. O. Sars in connecting the group with the *Pleurotoma* family, but am unable to follow him in giving it the dignity of a genus, nor can I, in the face of his type, accept "spira breviuscula" as one of its characteristics (Moll. Arct. Norv., p. 221, see pl. xvi. fig. 2).

60. *Pleurotoma* (*Thesbia*) *translucida*, Watson (Pl. XXV. fig. 11).

Pleurotoma (*Thesbia*) *translucida*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 444.

Station 145. December 27, 1873. Lat. 46° 43′ S., long. 38° 4′ 30″ E. Half-way between Marion Island and Prince Edward Island. 140 fathoms. Volcanic sand.

Station 149B. January 17, 1874. Lat. 49° 28′ S., long. 70° 30′ E. Entrance of Royal Sound, Kerguelen. 25 fathoms. Volcanic mud.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Animal.—*Foot* fuscous olive, large, thick, square in front, pointed behind. *Mantle* paler. *Siphon* rather short. *Head* and *tentacles* pale. *Eyes* large and black, on the upper outer side and at about a fourth of the length of the tentacles, which are rather solid, long, and cylindrical; between these, and a little above them, is the large prominent expanded snout, with a large circular opening in front, round which the edge of the snout projects like a thick fleshy fringe. There are two unequal *branchial plumes*. The *radula* consists of exceptionally minute, acicular, sharp-pointed, horny prickles. There is no *operculum*.

Shell.—Thin, horny, smooth, oval, with a tumid body-whorl, a rather high, subscalar, small-pointed, round-whorled, shallow-sutured conical spire, and a tumid lop-sided base, pointed at the pillar, but with scarcely any snout. *Sculpture:* Longitudinals—there are close-set fine hair-like lines of growth; under the microscope a system of much finer regular striæ is seen to cover the whole surface. Spirals—there are many fine, irregular, and unequal rounded striæ, which faintly appear on the surface, but are distinct on the pillar and front of the shell: besides these, there are fine microscopic smooth scratches. *Colour* white, with a faint tinge of yellow, horny, translucent, with a smooth and shining, but hardly glossy surface. *Spire* rather high, conical, subscalar, from a slight bulge of the shoulder. *Apex:* 2½ embryonic whorls, subcylindrically conical, rising to a small, rounded, slightly immersed tip, which is a little bent down on one side. *Whorls* 6 in all; they are rounded, tumid, with a faint subangulation below the sinus-area, in which there is a flattening rather than a constriction of the surface; below the periphery of each

whorl the form is cylindrical, with a very slight contraction into the lower suture. The whorls increase regularly, but rapidly; the last is large and tumid, with a protracted rounded base cut off on the left by an oblique, barely concave line. There is scarcely any snout, and the shell is truncated obliquely towards the point of the pillar, which projects in a rectangular prominence. *Suture* linear, impressed. *Mouth* very large, lop-sidedly oval, pointed above and below. *Outer lip* a semicircular curve in both planes, leaving a shallow, wide, shortly rounded sinus between the lip-edge and the body. *Inner lip:* a thin, narrow pad stretches very regularly along its whole length (which forms a very regular concave curve) out to the thin, twisted, obliquely truncated edge of the pillar: this edge runs out beyond the labial pad, and forms a thin sharp margin along the canal. H. 0·51 in. B. 0·28. Penultimate whorl, height 0·13. Mouth, height 0·32, breadth 0·14.

This species is more like *Pleurotoma* (*Thesbia*) *nana*, Lov., than anything else I know; but besides being very much larger, it has the body-whorl very much longer and more tumid, and the spire very much stumpier.

61. *Pleurotoma* (*Thesbia*) *corpulenta*, Watson (Pl. XXV. fig. 8).

Pleurotoma (*Thesbia*) *corpulenta*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 446.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Shell.—Thin, oval, spirally striated, with a tumid body-whorl, and a rather high, subscalar, small-pointed, round-whorled, shallow-sutured, conical spire, an obliquely conical base, and a slight square-cut snout. *Sculpture:* Longitudinals—there are slight hair-like lines of growth. Spirals—the subsutural sinus-area is very faintly concave, and below it is a slight carinal angulation; the whole surface is covered by fine flatly rounded threads, which are stronger and more remote on the penultimate than on the last whorl. *Colour* white. *Spire* rather high, conical, subscalar. *Apex* small, conical, rounded, with the extreme tip flattened down. *Whorls* 6, rounded, tumid in the middle, and very slightly contracted below into the suture; they increase regularly, but rather rapidly; the last is large, rather tumid at the shoulder, and contracts with considerable equality on either side to a shortly produced conical base, ending in a small but broadish snout. *Suture* broadly impressed. *Mouth* large, oval, pointed above, and truncate below at the point of the very short canal. *Outer lip:* a semicircular curve in both its planes: its edge forms a rather high shoulder, between which and the body lies the rather deep, funnel-shaped, rounded sinus. *Inner lip:* a thin narrow pad stretches along its whole length (which

forms a regular concave curve) out to the thin, twisted, obliquely truncate edge of the pillar; this edge runs out beyond the thin labial pad, and forms a sharp margin along the canal. H. 0·55 in. B. 0·31. Penultimate whorl, height 0·1. Mouth, height 0·3, breadth 0·19.

Compared with *Pleurotoma* (*Thesbia*) *translucida*, Wats., this has a rather higher and narrower spire, the suture is more oblique, and the last whorl, besides being much shorter, is more tumid above and less so below.

62. *Pleurotoma* (*Thesbia*) *platamodes*,[1] Watson (Pl. XXIV. fig. 3).

Pleurotoma (*Thesbia*) *platamodes*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 447.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Shell.—Thin, fusiform, very finely spirally striated, with a short, tumid body-whorl, a high, small, scalar, small-pointed, round-whorled, shallow-sutured spire, a very oblique and scarcely conical base, and a smallish very one-sided square-fronted snout. *Sculpture*: Longitudinals—there are very slight unequal lines of growth; and on the lower part of the whorls very slight remote oblique riblets, which entirely disappear on the last whorl. Spirals—fine, very regular and beautiful, sharp, close-set scratchings cover the whole surface. Below the suture a shallow concave trench marks the line of the old sinus; the lower edge of this broad furrow is defined by a slight thread. *Colour* white. *Spire* rather high, conical, scalar. *Apex* small, ending in a flattish, rounded, slightly raised point. *Whorls* 6, of regular, but rather rapid increase, rounded, without any contraction below; above, each laps up rather high and thinly on the whorl above; below this they at once swell out tumidly, but hollowed by a slight concave furrow, from which results the scalar rise of the spire; the last is tumid, but obliquely contracted on the base, and ends in a small square-fronted snout. *Suture* very slight and not in the least impressed, but well defined by the furrow below. *Mouth* large, oval, pointed above, and truncate below at the front of the very short canal. *Outer lip* a little patulous; in its arch it is a little gibbous above; the curve of the edge is nearly semicircular, with a high prominent shoulder, between which and close up to the body lies the deep, funnel-shaped, rounded sinus. *Inner lip*: a thin narrow glaze crosses the body and advances along the pillar, on which it rather early comes to an end, being cut off by the oblique, curved, and thin edge which runs out to the point of the shell; this glaze is defined by a small furrow on its outer margin. The pillar is rather long and straight. H. 0·4 in. B. 0·2. Penultimate whorl, height 0·07. Mouth, height 0·23, breadth 0·11.

[1] πλαταμώδης, flattened.

Compared with *Pleurotoma corpulenta*, Wats., this is a smaller, squatter shell, with a smaller and more scalar spire, whose outlines, too, are more concave; the body-whorl is much shorter and more tumid, and the base is much more contracted. From *Pleurotoma translucida*, Wats., it differs still more in these particulars. From both in its sculpture it is markedly distinct.

63. *Pleurotoma* (*Thesbia*) *membranacea*,[1] n. sp. (Pl. XXVI. fig. 9).

Station 168. July 8, 1874. Lat. 40° 28′ S., long. 177° 43′ E. Off New Zealand. 1100 fathoms. Blue mud. Bottom temperature 37°·2.

Shell.—Singularly unlike a *Pleurotoma*, being broad, short, tumid, and membranaceously thin; it has a short spire of few somewhat tumid whorls, which are parted by a slight horizontal suture; the surface is smooth and feebly spiralled; the colour white, under a thin brownish-yellow smooth persistent membranaceous epidermis; the base is long and gradually contracted, the snout broad and lop-sided; the sinus lies close up to the suture. *Sculpture:* Longitudinals—there are fine irregular unequal hair-like lines of growth, which are finely puckered below the suture. Spirals—the whole surface is scored by very slight remote impressed lines, and flat feeble threadlets, which are very irregular, and are interrupted at every biggish line of growth; just below the suture these are a little feebler, broader, and more regular than elsewhere. *Colour* white, under a brownish-yellow, smooth, glossy, thin, membranaceous epidermis; entirely translucent from the excessive thinness of the shell. *Spire* short-pointed, conical. *Apex* eroded but evidently small. *Whorls* 5 remaining; they are short, broadish, and a little tumid, convex, rounded, not keeled, not at all contracted below: the last is large, tumid, and elongated, being drawn out on the base, which is long and rounded; the snout is broad, but is somewhat broken. *Suture* linear and slight, but distinct in consequence of the junction of the whorls. *Mouth* semi-lunar, sharply angulated above and below. *Outer lip* very thin, regularly curved, with a deep wide sinus close up to the suture, whence the front edge of the shell makes a prodigious forward and downward sweep, and then retreats again to the point of the pillar. *Inner lip:* there does not seem to be even a glaze on the body; there above, the line is convex, but down the very slightly swollen pillar it runs direct but very obliquely to the left; the point of the pillar is not truncate, but the sharp edge runs out with a twist, and forms a sharp point at the end of the pillar; the broad open canal in front seems not to have been in the slightest degree emarginate. H. .0·87 in. B. 0·53. Penultimate whorl, height 0·17, breadth of first remaining whorl, 0·03. Mouth, height 0·62, breadth 0·28.

This and *Pleurotoma xanthias* have a strong general similarity, but differ in all details. There is nothing they so much resemble as *Clathurella pachia;* but that is a very much smaller form, more

[1] So called from its extreme thinness.

elongated, and has the cross-hatched apex of *Clathurella*. I have called them Thesbias for a subgenus, having small regard for such subdivisions, and knowing, like others, as yet too little about the deep-sea forms to attempt to classify them for myself. Probably they do not at all belong to this group, but they cannot well go elsewhere at present.

64. *Pleurotoma* (*Thesbia*) *xanthias*,[1] n. sp. (Pl. XXVI. fig. 10).

Station 168. July 8, 1874. Lat. 40° 28′ S., long. 177° 43′ E. Off New Zealand. 1100 fathoms. Blue mud. Bottom temperature 37°·2.

Shell.—Rather like the young of *Columbella rustica*, Linne, being oval, biconical, and a little tumid; the spire is high and conical, the base long and pointed; the surface is smooth and feebly spiralled, and white. *Sculpture:* Longitudinals—there are fine hair-like lines of growth, which are slightly puckered below the suture. Spirals—there is a blunt carination in the middle of the whorls, below which the surface is scored with flat threads parted by slight irregular lines; above the keel on the shoulder these spirals are wholly absent. *Colour* white, with a glossy surface. *Spire* high, conical. *Apex* has probably 3 to 3½ whorls, but the extreme tip is broken and only 2 remain; they are yellow and conical, and are microscopically scored by minute narrow raised lines which are straight above, but below slope very obliquely to the left; they are not reticulated as in *Clathurella*. *Whorls* 4½, below the apical nucleus; they are feebly angulated in the middle; the last is large, tumid, and has a swollen base prolonged into a broad triangular lop-sided snout, which is not at all emarginate in front. *Suture* very slight indeed, but distinct. *Mouth* narrowly oblong, pointed above, and having no canal in front. *Outer lip* thin, flatly arched, with a deep broad sinus which lies up at the very suture, and with no shelf at the insertion; below the sinus the edge of the lip sweeps forward in a great wing-like curve. *Inner lip:* there is a mere thin glaze on the body; its line is barely convex on the body, subangulatedly concave at its junction with the pillar, which is longish, oblique to the left, and slightly truncate at the point. H. 0·77 in. B. 0·4. Penultimate whorl, height 0·13, breadth of first remaining whorl, 0·03. Mouth, height 0·47, breadth 0·2.

The mouth is somewhat broken and the shell considerably obscured by an *Actinia* which has enveloped it. This species has a strong general likeness to *Pleurotoma* (*Thesbia*) *membranacea*, Wats., but is smaller, narrower, less ventricose, with a higher spire and keeled whorls. From *Clathurella pachia*, Wats., which is also very like this species, it differs in being larger, broader, with keeled whorls and a scored, not reticulated, apex. Probably those who have not seen the shells will be tempted to unite these species, but when actual specimens are examined the essential differences are very striking.

[1] ξανθίας, yellow head, so called from the colour of the tip.

65. *Pleurotoma* (*Pleurotomella*) *brychia*,[1] Watson (Pl. XIX. fig. 4).

Pleurotoma (*Pleurotomella*) *brychia*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 451.

Station 106. August 26, 1873. Lat. 1° 47′ N., long. 24° 26′ W. Mid-Atlantic. 1850 fathoms. Globigerina ooze. Bottom temperature 36°·6.

Animal.—In colour pale buff, with a greenish liver. The mantle is prominent, thin, made up of separate, but connected, threads like a fringe, with a denticulated margin. From within it to the left a great fold of flesh projects, whose drawn-together edges form the anterior siphon; this fold is an extension of the inner side of the mantle close within its edge, which edge expands into a flap to enclose this siphon. On the right the mantle is drawn back and expanded, so as to form an imperfect open channel corresponding to the sinus of the outer lip. The body is rather small, cylindrical, protracted into a strong, rounded, abruptly truncate snout, which is probably long when not contracted by the spirit. On either side of the snout, and rather below the middle of its horizontal line, project the tentacles, which are short, cylindrical, and blunt, and have no eyes at any part, either of their base or on their length. The foot is large, being broad and flat, but not high; in front it is broad and square, with projecting rounded corners; behind it is long and pointed. There is no branchial plume; but on the under surface of the mantle is a strong central line with long pectinated fringes extending from it on either side. The cloacal duct does not open in the body, but runs out on the right side in the mantle to a large, longish, thickened nipple, which corresponds with the sinus of the shell. This duct was full of hard oval green pellets. Mr John Murray, Director of the Challenger Commission, kindly examined these for me, and writes:—"In the little pellets I find Coccoliths, small Globigerinas, Pulvinulinas, and their broken fragments, Diatoms, Polycistinas, Challengerias, fragments of a Crustacean, and setæ of an Annelid." *Operculum* none.

Shell.—Very short and broad, biconical, subscalar, angulated, very thin, obsoletely ribbed, with spiral threads, and having a longish, lop-sided, small-pointed snout. *Sculpture*: Longitudinals—on the penultimate whorl there are about 20 short, scarcely oblique, small, rounded, little prominent ribs, with shallow rounded furrows between of a like breadth; they only occupy the lower half of the whorls, extending to the inferior suture, but not at all to the shoulder; they diminish rapidly in number up the spire. On the body-whorl they appear only as oblique and slightly elongated tubercles, which coincide entirely in direction with the lines of growth. These are fine, close-set, and hair-like: below the suture they are straight and irregular, forming on the upper whorls infrasutural crenulations; on the body-whorl they rise into slight undulations in prolongation of the

[1] βρύχιος, from the depths.

ribs, and these continue to the point of the snout. Spirals—there is a blunt angulation about the middle of the whorls; and here the longitudinal ribs take their rise. The whole surface of the shell is covered with rounded threads and furrows: on the shoulder of the whorls these are rather obsolete; on the angle among the tubercles they are strong, but rather crowded; but from this downwards they are very distinct and regular, with a few finer ones interspersed, becoming a little crowded on the snout, and then sparse and stronger at the extreme point. *Colour* alabaster-white, almost translucent from the thinness of the shell. *Spire* conical, with profile-lines a little interrupted by the contraction of the sutures. *Apex* slightly eroded, but evidently small and rounded; the embryonic whorls seem to be about two. *Whorls* 8 in all, of rapid increase, but that rather in breadth than height; the last is extremely large and tumid; they have a long and gently sloping shoulder above, and are cylindrical below the blunt angulation which bisects them; the last contracts slowly from the angle, and is tumidly convex on the base, the curve of which sweeps on, on the right side, uninterruptedly to the point, while on the left side it passes by a rather deep concave curve into the lop-sided, triangular-shaped, small-pointed snout, which, however, projects very much in the line of the axis. *Suture* strong, a little channelled from the overlap of the calcareous surface of the inferior whorl, well defined from the angulation made by the meeting of the whorls. *Mouth* large, long, angularly pear-shaped, and oblique to the axis. *Outer lip* very thin; it is a high arched curve, straight and steep on the shoulder, and regular from the angulation downwards: the edge retreats on leaving the body, and forms a wide, deep, elliptically rounded sinus occupying the whole shoulder, having above it a short triangular shelf, and below, the high elbow formed here by the prominent sweep of the lip-curve, which does not retreat till near the end of the snout. *Inner lip* is shallowly excavated in the substance of the shell, which rises beyond it with a slight edge; it is broad, and winds round the pillar; the line of it is slightly convex on the body and concave at the junction with the pillar, which is short and conical, obliquely cut off to a point, with a long, fine, rounded, and slightly twisted edge. H. 0·95 in. B. 0·57. Penultimate whorl, height 0·15. Mouth, height 0·62, breadth 0·35.

This is a very peculiar and beautiful species. The animal is so much unlike other Pleurotomas as to make the classification of the species very doubtful.

66. *Pleurotoma* (*Pleurotomella*) *pruina*, Watson (Pl. XXIV. fig. 4).

Pleurotoma (*Thesbia*) *pruina*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 453.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. San Miguel, Azores. 1000 fathoms. Volcanic mud.

Shell.—Strong, white, dark-brown tipped, biconical, with a short, stout, scalar spire, angulated whorls, a roundly contracted marginated suture, and a small body-whorl, conically narrowed into a small unequal-sided snout. *Sculpture:* Longitudinals—on the earlier whorls there are very small, narrow, oblique ribs originating in a mid-whorl row of tubercles, but on the last whorl the riblets almost disappear: there are fine scratches in the lines of growth; these are peculiarly sharp and regular in the sinus-area. Spirals—the whorls are bisected by a strong angular keel sparsely but regularly set with small round knobs, from which the longitudinal ribs descend; below the suture there is a narrow cylindrical collar of two fine contiguous threads: the sinus-area is free of these; but from the keel downwards the surface is covered by fine narrow rounded threads, separated by broader intervals; near the keel these are crowded; on the point they are wider apart, on the base they are most sparse: besides these, there is a delicate microscopic fretting. *Colour* porcellanous white, dead or frosted in the interstices, but pellucid and glossy on the spiral threads; the apex is dark ruddy brown. *Spire* conical, scalar, shortish, blunt. *Apex* consists of $3\frac{1}{2}$ cylindrically globose rounded whorls separated by a linearly impressed suture; they rise to a flattened top, consisting of fully $1\frac{1}{2}$ whorls, in the midst of which lies the very minute and immersed tip. These whorls are coloured of a deep, rich, translucent, faintly ruddy brown; the earliest ones, perhaps from rubbing, are glossy, but further on they are crossed by crowded, curved, sharpish, almost microscopic riblets, between which are finely microscopic spirals whose course is not quite uniform. *Whorls* $7\frac{1}{2}$; but the shell is probably not quite full-grown: they are of very regular and slow increase, broad and short, each one laps up on the one before it, and is there shortly cylindrical, has then a pretty long, concave, and somewhat horizontal shoulder to the keel, which is right-angled; below this the whorls are cylindrical with a slight contraction downwards to the inferior suture. The body-whorl contracts from the keel downwards, with a convexly conical and very unequally-sided base, produced into a small bluntly pointed snout. *Suture* a very shallow rounded furrow defined by the infrasutural collar and the contraction of the whorls. *Mouth* angularly pear-shaped, being truncate above and prolonged into the broadish canal below. *Outer lip* leaves the body at a right angle, and advances direct to the keel, from which point to the end of the snout it forms almost a straight line; its edge is at the keel thrown out into a high shoulder, between which and the body lies the shallow, open, rounded sinus, with a narrow triangular shelf between it and the body-whorl: the lip-edge is thin throughout. *Inner lip* is excavated somewhat deeply and flatly into the thickness of the shell, and runs on to the extreme point of the rather short and oblique pillar, whose inner edge has a long gradual twist. H. 0·37 in. B. 0·2. Penultimate whorl, height 0·08. Mouth, height 0·2, breadth 0·1.

The classification of this species is not very satisfactory. It may quite well be a *Surcula;* but the stained apex deserves stronger recognition than that place would give it. The sculpture of the

apex is strongly suggestive of *Clathurella;* but the shape of the apex is blunter than is characteristic of that group, while the ornamentation is not really reticulate.

It has some general resemblance to *Pleurotoma torguata*, Phil.; but the sculpture is more delicate, and the spire is stumpier than in that species, which has also a sharp-pointed yellow apex with true *Clathurella* reticulated ornamentation.

67. *Pleurotoma* (*Pleurotomella*) *papyracea*, Watson (Pl. XX. fig. 5).

Pleurotoma (*Thesbia*) *papyracea*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 450.

Station 147. December 30, 1873. Lat. 46° 16′ S., long. 48° 27′ E. Between Prince Edward Island and the Crozets. 1600 fathoms. Diatom ooze. Bottom temperature 34°·2.

Shell.—Thin, like delicate tissue-paper, white, bluntly keeled, subplicate, with a small, high, sharp, scalar spire, an angulated suture, a short tumid body-whorl narrowing from the carina, suddenly contracted on the base, and prolonged into a largish triangular one-sided snout. *Sculpture:* Longitudinals—there are extremely fine hair-like lines of growth; there are also oblique, rounded, narrow foldings of the surface, which below the sinus-area rise into 14 small, narrow, sparse ridges or elongated tubercles and extend to the base: on the earlier whorls these rise into small thread-like ribs which reach the inferior suture. Spirals—the almost membranaceous sinus-area forms a sloping shoulder below the suture, and occupies about one-third of the whorl; below this is the keel, on which the little tubercles rise: from this keel downwards the surface is covered with minute, unequal, but rather regular, though somewhat interrupted, sparse threads with broader intervals: besides this there is a microscopic, obsolete, spiral granulation which extends to the sinus-area. *Colour* alabaster-white, so far as the excessive thinness permits; the small spiral threads are somewhat dead white; the embryonic whorls are of a rich ruddy-orange tint. *Spire* perfectly conical, scalar, high, sharp. *Apex* consists of $3\frac{1}{2}$ ruddy, smooth, embryonic whorls, which are globose, divided by an impressed suture, and rise to a small, blunt, round top, in the middle of which the extreme tip just barely rises into sight. *Whorls* $8\frac{1}{2}$ in all, of slow, but increasingly rapid enlargement; those of the spire are rather narrow and high, and have a high flat shoulder, a sharp angulated keel, and a very slight contraction from this point to the inferior suture; the last whorl is tumid, but short, with a sloping shoulder, a much blunter angulation, a marked contraction from this point, a very blunt angulation defining the base, which contracts a good deal and suddenly, and which on the right side is prolonged into the conical, triangular-shaped, blunt though small-pointed snout. *Suture* linear and almost invisible, but well defined by the angulation at which the whorls meet, and also by the change of colour where the inferior whorl laps up on the one above it, which produces a pseudo-margination. *Mouth* large and

irregularly semicircular, angulated above, and ending in a distinct open canal below. *Outer lip* excessively thin, slightly patulous below, but not at all above; it leaves the body at a right angle, and advances across the sinus-area in a perfectly straight line; it is angulated at the keel, from which point it curves very regularly, till towards the edge of the canal it becomes concave and finally straight; round the front of the canal it is not in the least patulous: its edge forms a semicircular curve with a high shoulder, between which and the body lies the large, broad, open, rounded sinus. *Inner lip*, which, though very narrow, is continued to the point of the pillar, is cut into the substance of the shell, and is defined by a slight raised margin beyond it; the line across the body is very short, and joins the pillar at a very obtuse angle. The *pillar* is very long and straight, and is cut off in front with a very gradually oblique, thin, twisted edge. H. 1·04 in. B. 0·52. Penultimate whorl, height 0·2. Mouth, height 0·59, breadth 0·3.

This is a species of the most singular beauty and delicacy, like nothing known to me.

68. *Pleurotoma* (*Mangelia*) *nitens*, Hinds.

Clavatula nitens, Hinds, Voy. "Sulphur," p. 20, No. 67, pl. vi. fig. 17.
Pleurotoma nitens, Reeve, Conch. Icon., vol. i. pl. xxii. fig. 189.
Drillia (*Clavatula*) *nitens*, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 154.
Mangilia nitens, Tryon, Manual, vol. vi. p. 253, pl. xx. fig. 2.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—New Guinea, Straits of Macassar and Malacca, from 7 to 22 fathoms (Hinds), North-east Australia and Torres Strait (Brazier).

69. *Pleurotoma* (*Mangelia*) *subtilis*, Watson (Pl. XXIII. fig. 4).

Pleurotoma (*Mangelia*) *subtilis*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 430.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Very small, conical, sharp-tipped, with a lop-sided base, subscalar, ribbed, and with spiral threads; there is a strong labral varix, with a small, deep, round sinus. *Sculpture:* Longitudinals—there are on the last whorl about thirteen rounded, rather weak, slightly oblique longitudinal ribs, which extend to the snout; on the fifth and sixth whorls they are fewer, but rather stronger; on the fourth whorl they are lamellar; they are parted by shallow open furrows of fully two-thirds their breadth. The whole surface is covered with microscopic but coarse hair-like lines of growth. Spirals—there are 25 to 30 close-set, flatly rounded, alternatingly stronger and weaker spiral threads, of which those on the shoulder and base of the last whorl are the weakest; those (twelve in

number) in the middle of the body are broadest; those on the snout are the most prominent, especially the highest three; of the group on the body, the highest which comes in below the sinus-area forms a very slight keel to the whorls. *Colour* buff. *Spire* subscalar, high, conical. *Apex* consists of $1\frac{1}{2}$ embryonic whorls, which rise regularly to a high, fine, rounded point, the extreme tip of which is quite prominent. *Whorls* 7, of regular increase, high and rather narrow, very slightly carinated, convex; the last is long and narrow, nearly cylindrical in the middle; on the right side the base is scarcely contracted; but on the left side it is cut off with a long, oblique, and very considerable truncation, and is in this way very lop-sided. *Suture* not deep, but distinct and impressed. *Mouth* long and narrow, with nearly parallel sides; the short open canal is of the same width and direction as the mouth itself, and ends in a rather deep nick; the sinus above is about half the width of the mouth, from which it turns off through the thick lip very obliquely, and is funnel-shaped. *Outer lip* in direction oblique and almost straight, a very little inflected, thick, its front face roundly bevelled off to the inner side, and its two sides parallel; it is strengthened by a strong external rounded varix, which extends to the front of the very short snout but not to the pillar; internally there is a slight pad faintly scored by very obscure teeth, but terminating in a single, small, rounded, and rather prominent tubercle on the lower side of the sinus. *Inner lip* very narrow and thin, but with a thickened pad between the sinus and the body-whorl; its direction is oblique, a little concave above; it is very straight on the pillar. H. 0·152 in. B. 0·06. Penultimate whorl, height 0·028. Mouth, height 0·078, breadth 0·019.

This species resembles a good deal a very small and refined *Pleurotoma rugulosa*, Phil., having the same lop-sided base; but that species has the right side of the base somewhat more obliquely truncated; so that there is much less of inequality between the two sides than in the Challenger species, which is also slimmer, has the sculpture both of ribs and spirals very much finer, the apex much smaller and higher, the suture less deep, and the nick of the canal in front very much more distinct.

70. *Pleurotoma* (*Mangelia*) *levukensis*, Watson (Pl. XXIII. fig. 7).

Pleurotoma (*Mangelia*) *levukensis*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 432.

July 29, 1874. Levuka, Fiji. 12 fathoms.

This species extremely resembles *Pleurotoma septangularis*, Mont., in general appearance and in sculpture, both as regards ribs and the fine spiral striæ. In form it is smaller, narrower, and much more cylindrical, the body-whorl is similarly tumid; but it and the mouth still more are shorter; the penultimate whorl is very much smaller and especially is narrower; while the upper whorls are broader, and the apex very much broader and blunter. The specimen is in too bad condition for detailed description.

H. 0·22 in. B. 0·1. Penultimate whorl, height 0·04. Mouth, height 0·09, breadth 0·038.

71. *Pleurotoma* (*Mangelia*) *eritmeta*,[1] Watson (Pl. XXIII. fig. 5).

Pleurotoma (*Mangelia*) *eritmeta*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 432.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 fathoms. Volcanic mud.

Shell.—Small, rather narrow, biconical, continuously ribbed, microscopically spirally striated, with a very blunt tip, a rather fine but expressed labral varix, and a very slight shallow sinus which does not cut through the lip. *Sculpture:* Longitudinals—there are eight narrow, rounded, prominent, direct, very slightly oblique ribs, which run continuously from apex to point of base; there are also very faint scratches in the lines of growth. Spirals—the whole surface is very delicately fretted with microscopic, regular, sharpish spiral striæ. *Colour* warm yellowish-white, with a ruddy band below the suture. *Spire* regularly conical. *Apex* consists of rounded, globose, smooth whorls, of which the tip is broken. *Whorls* 6 remaining, of regular but rather rapid increase, rather high and narrow, just perceptibly convex; the last is small, very little tumid, with a short, conical, lop-sided base, ending in a very short, flattish snout, crossed by the longitudinal ribs. *Suture* linear, scarcely impressed. *Mouth* very small and narrow, with almost parallel sides, contracted above into a small narrow sinus, which cuts only half-way through the thick outer lip; the canal in front is deep, turning in behind the pillar; it is nearly as broad as the mouth, and is abruptly cut off in front. *Outer lip* very slightly convex, a very little inflected, thick, with a very small projecting sharp inner edge and a prominent narrow pinched-in external varix, which extends to the extreme point but not round the snout; it is half cut through at the very top by the sinus, which, however, does not show itself on the front of the lip; but at this point the whole lip-edge retreats a little and rises slightly on the body-whorl. *Inner lip:* there is a minute pad at the top; but all the rest of it is very thin: in its direction it is a very little oblique; its edge in front is narrow, rounded, and very slightly twisted. H. 0·194 in. B. 0·087. Penultimate whorl, height 0·039. Mouth, height 0·09, breadth 0·025.

This species somewhat resembles both *Pleurotoma turgidula*, Forbes (=*nana*, Scacchi), and *Pleurotoma septangularis*, Mont.; but is slimmer than either of these, the suture is less impressed, and the ribs are much more regular, more continuous, and less tumid in breadth and prominence; the spiral sculpture, too, is *very* much finer, the lines and furrows being much more minute; the mouth, too, is much smaller and narrower, and has not the convex outer lip.

72. *Pleurotoma* (*Mangelia*) *hypsela*,[2] Watson (Pl. XXI. fig. 4).

Pleurotoma (*Mangelia*) *hypsela*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 433.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

[1] ἐρίτμητος, well cut. [2] ὑψηλός, high.

Shell.—High, narrow, and conical, with very short whorls, of which there are 6; the last whorl exceptionally small, with a short conical base and very small snout; the suture very slight, but extremely oblique; the apex blunt and rounded; there are narrow, high, rounded, curved, and very oblique ribs, which run continuously from the apex to the point of the base, but not to the snout; there are obsolete spiral striæ, which become stronger on the point of the pillar. H. 0·19 in. B. 0·067. Penultimate whorl, height 0·033. Mouth, height 0·078, breadth 0·033.

The specimen of this very marked species is in too bad condition for more minute description. It is very like *Pleurotoma* (*Drillia*) *exilis*, Pease, but is much more attenuated, and the last whorl is much shorter.

73. *Pleurotoma* (*Mangelia*) *acanthodes*,[1] Watson (Pl. XXIII. fig. 3).

Pleurotoma (*Mangelia*) *acanthodes*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 433.

Station 56. May 29, 1873. Lat. 32° 8′ 45″ N., long. 64° 59′ 35″ W. Off Bermuda. 1075 fathoms. Coral mud. Bottom temperature 38°·2.

(?) Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Shell.—High and narrow, biconical, ribbed and spiralled, of a frosted-white colour, with subscalar, blunt but small-pointed spire, a small body-whorl and mouth, and rather contracted base. *Sculpture:* Longitudinals—on the last whorl there are 14, on the penultimate 10, and on the first regular whorl 9 ribs: they arise very feebly at the suture, gain height in the sinus-area, and add on a little breadth below; they are high, narrow, and rounded; toward the mouth they are crowded, but in general are parted by rounded furrows of two or three times their width; they extend to the extreme point of the base, but not to the snout. The whole surface is likewise fretted with minute sharp lines of growth. Spirals—on the embryonic whorls there is one, on the other whorls two, fine spiral threads; the upper and stronger lies below the sinus-area about one-third down the whorl, and forms, with help of an angulation at that point, a rather sharp keel, rising into small sharp tubercles at the intersections of the ribs; between this keel and the root of the snout there are on the last whorl six weaker threads, which all rise into tubercles as they cross the ribs. On the snout are three or four weaker threads without tubercles: the interstices of these spirals are from twice to four times their width. The whole surface of the shell, except the embryonic whorls, is scored with very fine, sharp, close-set spirals, which, at crossing the lines of growth, are beset with microscopic blunt prickles which give the frosted aspect to the shell. *Colour* white; only the tip is smooth. *Spire*

[1] ἀκανθώδης, prickly.

conical, scalar, in consequence of the drooping projecting shoulder at the top of each whorl. *Apex* consists of 3½ embryonic whorls, which are conically globose, smooth, keeled, closely, roundedly ribbed, with a deepish suture, and rise to a minute point (crushed). *Whorls* 8½ in all, a little hunchy and disorderly; they have a long slightly drooping shoulder defined by the keel, below which they are cylindrical, with a slight contraction into the lower suture; the last whorl is small, with a contracting scarcely convex base, prolonged into a small, but distinct, and somewhat cylindrical snout. *Suture* small, slightly impressed. *Mouth* small, narrow, slightly pear-shaped, oblique, triangular above, prolonged into the small canal below. *Outer lip* flat at the shoulder, angulated at the keel, slightly convex below this; the edge projects thinly beyond the last longitudinal rib, which serves as a varix: it presents a flattened, but regular curve from the point of the shell to the keel, where the edge forms a little shoulder, between which and the body lies the narrow round small sinus, with its flanged border. *Inner lip* straight, with a very thin narrow glaze which early runs out to the rim, being cut off by the slightly oblique and twisted edge, which continues with a slight patulous margin to the point of the shell. H. 0·34 in. B. 0·12. Penultimate whorl, height 0·07. Mouth, height 0·15, breadth 0·04.

The specimen from Station 75 is somewhat broken and rubbed, and is therefore attributed to this species with a doubt; the identity, so far as means of comparison exist, is close, only the individual whorls are a little broader and shorter. *Pleurotoma* (*Mangelia*) *corallina*, Watson, is so similar, that I classed this at first as a variety of that other under the name *elongata;* but I am now persuaded of their distinctness. In *Pleurotoma acanthodes* the embryonic apex is narrower, higher, and sharper, with an indefinite junction to the regular whorls; in *Pleurotoma corallina* it is much more compact, with the whorls more sunken or immersed, broader, and lower, and its junction is very distinctly defined. In *Pleurotoma acanthodes* there are 3½ embryonic whorls, which are contracted, also minutely tubercled on the keel; and the lower part of the whorls is nearly smooth. In *Pleurotoma corallina* there are 4 embryonic whorls, which are not keeled and are scarcely angulated, with a very slight contraction into the lower suture; the riblets are stronger, and extend from the upper almost to the lower suture. *Pleurotoma corallina* is a larger, sharper-cut shell, squarer in its lines; four whorls in it are as long as five in the other, the body-whorl especially being longer and in the base much more elongated and fuller, and the snout is broader.

74. *Pleurotoma* (*Mangelia*) *corallina*, Watson (Pl. XXIII. fig. 1).

Pleurotoma (*Mangelia*) *corallina*, Watson, Prelim. Report., pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 435.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—High, narrow, with squarish lines, biconical, ribbed and spiralled, of a frosted-white colour and coral-like texture, with a scalar, blunt, but small-pointed spire, a smallish

body-whorl, a conical base, and a small, undefined snout. *Sculpture:* Longitudinals—there are about 13 ribs on each whorl; but they do not all exactly answer from whorl to whorl; they rise feebly just at the suture, but quickly increase in height, more slowly in breadth; in the sinus-area they are curved; from the shoulder they are straight, with only a slight curve on the base; they die out on the snout; they are narrow and rounded, and are parted by rounded furrows of three times their breadth; the whole surface is also fretted with sharp minute lines of growth. Spirals—there is a straight, slightly drooping shoulder below the suture; this ends above the middle of the whorl in a distinct angulation defined by a fine thread, which rises into small, sharp, rounded tubercles as it crosses the ribs. On the penultimate whorl a finer thread begins to appear in the inferior suture, but gradually rises above it; it is from this lower spiral that the contraction of the base begins: on the base are 3 or 4 finer spirals parted by spaces about four times their width; then follow several weaker crowded spirals, then one stronger and more prominent: all these rise into small tubercles on crossing the ribs: beyond the end of the ribs, on the snout, are some 6 fine distinct threads. The whole surface between these is closely covered with very fine spiral threads, which on all the longitudinal lines of growth are beset with most orderly and regular microscopic blunt prickles, which give the coral-like aspect to the surface. *Colour* white; the tip alone is smooth. *Spire* conical, scalar. *Apex* consists of 4 embryonic whorls, which are bluntly conical, depressed, rounded, ribbed, with a distinct suture, and rise to a minute tip (crushed). *Whorls* 8 in all, broad and short, of regular increase, sharply keeled at the shoulder-spiral, and from this very slightly contracted, but altogether angular, not curved: the last whorl is small, but attenuated, not constricted, is scarcely convex on the base, and is produced into a short, vaguely defined, and very obliquely pointed snout. *Suture* very slight, but defined by the angulation at which the whorls meet. *Mouth* small, narrow, slightly pear-shaped, very little oblique, bluntly triangular above, and prolonged into the short, open, scarcely narrowed canal below. *Outer lip* flat at the shoulder, angulated at the keel, scarcely convex below this; the edge projects as a thin sharp lamina beyond the last longitudinal rib, which serves as a varix from the point of the shell to the keel; the edge is hardly convex, and scarcely forms a shoulder above, the sinus being merely a small rounded hollow. *Inner lip:* the glaze is exceptionally narrow and short; the curve of the lip is a very little concave at the base of the pillar, which is rather longer and narrower than one would expect, and which is cut off in front with a long, slightly oblique, bluntly rounded, twisted edge. H. 0·32 in. B. 0·13. Penultimate whorl, height 0·08. Mouth, height 0·16, breadth 0·06.

This and *Pleurotoma* (*Mangelia*) *acanthodes* are extremely alike; but one easily notices the relatively shorter and broader form and the squarer outline and ribbing of this. Under that other I have mentioned a number of features of difference which, though individually minute, concur in marking the distinction of the two species. A comparison of this species with *Pleurotoma* (*Rhaphitoma*) *nuperrima*, Tib. = *Pleurotoma decussata*, Phil. (not = *Pleurotoma* (*Rhaphitoma*) *hispidula*, Jan, which is certainly

distinct),[1] suggested by Dr Gwyn Jeffreys, I was enabled to obtain through the kindness of the Marquis de Monterosato. *Pleurotoma* (*Mangelia*) *corallina* resembles that other in the minute blunt prickles which are found on many corals, and which ornament the spirals; but the Challenger species is far smaller and narrower, the last whorl in particular is very much shorter and less tumid, the whorls are always more angular, the spirals are fewer, the longitudinal ribs are both fewer and stronger, and the apex is utterly different both in form and sculpture.

75. *Pleurotoma* (*Mangelia*) *macra*,[2] Watson (Pl. XXIII. fig. 6).

Pleurotoma (*Mangelia*) *macra*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 437.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of the Azores. 1000 fathoms. Pteropod ooze. Bottom temperature 39°·4.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. Off San Miguel, Azores. 1000 fathoms. Volcanic mud.

Shell.—High, narrow, biconical, fragile, translucent white, glossy, feebly ribbed and spiralled, with a stumpy subscalar spire, ending in a large, conical, sculptured, sharp-tipped dome, and with a small body-whorl, contracted base, and produced snout. *Sculpture:* Longitudinals—there are on the last whorl about 20 flexuous oblique threads; they rise at the suture, retreat very much in the sinus-area, but at the angulation below this they curve forward and die out on the base; the flat intervals which part them are three times their breadth; the system of longitudinal ribs on the embryonic whorls is very much like that of the shell, but is really different: the lines of growth are very fine, and are quite independent of the ribs. Spirals—below the sinus-area there is a blunt angulation strengthened by a row of small tubercles on the ribs. The surface is covered with very obsolete broadish threads, which are crowded on the body, but on the base are stronger, more regular, and wider apart; on the snout they are finer and more crowded. The suture is marginated below by a flat thread. *Colour* almost papyraceous white. *Spire* is subscalar, narrow, and would be high but for the abruptness with which it is crowned by the apex, consisting of four yellow conically globose whorls, of which the last is large and dome-shaped, and the first minute, prominent, but at the very tip slightly bent down; the first two are smooth; the last two are sparsely crossed by minute cusp-like threads or riblets. *Whorls* 7 to 8 in all, rather high, with a drooping shoulder in the sinus-area, which is defined by the angulation below; below this the upper whorls are nearly cylindrical, while the body-whorl is barely convex: this whorl is small; on the base

[1] The minute ornamentation of the surface in these two species is very similar, and is apt to mislead; but the form of the whorls and the details, both of longitudinals and spirals, are different. The embryonic whorls, too, are distinct, being in *Pleurotoma* (*Rhaphitoma*) *nuperrima*, Tib., broader and more pressed down; the sculpture is diverse also, the longitudinal ribs being the prominent feature in *Pleurotoma nuperrima*, Tib., while in *Pleurotoma hispidula*, Jan., it is the spirals

[2] μακρός, long.

it is a little contracted and drawn out, and is produced into a small and rather lop-sided snout. *Suture* minute, but impressed and further defined by the marginal thread. *Mouth* small, narrow, pear-shaped, triangular above, and produced below into the relatively broad, open, and deep canal. *Outer lip* flat at the shoulder, feebly angulated at the keel, scarcely convex below; the edge, which is quite independent of the ribs, is very convexly prominent below, with a high and advancing shoulder, above which lies the deep, open-mouthed, rounded sinus. *Inner lip* is exceedingly narrow; it is thinly cut into the substance of the shell, and very early runs out on the slightly oblique, narrow, twisted edge of the pillar, which is straight, narrow, and very slightly angulated at its junction with the body. H. 0·25 in. B. 0·09. Penultimate whorl, height 0·044. Mouth, height 0·13, breadth 0·04.

Probably none of the specimens obtained of this species are quite full-grown. I have put this, and the two following species, under *Mangelia*, not because they at all agree in sculpture with that group, for they do not, but because the apex agrees better with the apex of *Mangelia* than it does with that known to me in any other of these very perplexing and badly defined groups. I do not believe that these and many other species can remain where I have put them, but as the entire family is in process of disintegration they may fare with the rest.

76. *Pleurotoma* (*Mangelia*) *incincta*, Watson (Pl. XXIV. fig. 7).

Pleurotoma (*Mangelia*) *incincta*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 438.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. Off San Miguel, Azores. 1000 fathoms. Volcanic mud.

Shell.—High and narrow, with rounded lines, biconical, thin, white, glossy, feebly ribbed, faintly spiralled, and slightly keeled, having a high, stout, conical spire ending in a blunt point, with a small long body-whorl, produced base and snout. *Sculpture:* Longitudinals—there are on each whorl about 22 slight and unequal threads serving as ribs; they are cusped at the top of the whorls, and oblique below; on the last whorl they are sinuous, but very obsolete: the ordinary lines of growth are excessively faint, except in the sinus-area, where they are sharp though minute. Spirals—the suture is marginated below with a very small, prominent gemmed thread; below the plain suture-area is a slight keel, beset by small tubercles where it crosses the riblets. On the body flat threads are just perceptible, which increase in distinctness on the point of the base; on the snout these become more raised, and are parted by intervals of two or three times their width. *Colour* porcellanous white. *Spire* broadish, conical. *Apex* consists of 4 globose, conical, yellowish embryonic whorls, whose point of union with the regular whorls is slightly obscure; the last is rather closely curvedly ribbed longitudinally, while the earlier ones are polished and smooth; the extreme tip is small. *Whorls* 8 in all, rather broad, with

a very slight drooping shoulder defined by the tubercled spiral thread and keel which bisects the earlier whorls, but loses importance in all ways further down; below this keel there is a slight gradual contraction into the inferior whorl; the last whorl is very slightly tumid, with a protracted, slightly convex base produced into a narrow snout. *Suture* a little impressed, marginated below by the infrasutural thread, whose upper edge forms a minute horizontal shelf, and which looks as if it girt-in the shell.[1] *Mouth* long, narrow, pear-shaped. *Outer lip* thin and sharp, steeply curved above, slightly convex below; the edge advances below in a full round sweep; above it forms a prominent, but not very high shoulder, above which lies the open rounded sinus, with a minute triangular shelf formed by the projection of the infrasutural thread, and to a small extent separating the sinus from the body. *Inner lip* narrow, shallowly excavated in the substance of the shell, dying out early in front on the oblique, sharp but rounded, twisted and slightly reverted edge of the pillar. H. 0·5 in. B. 0·18. Penultimate whorl, height 0·08. Mouth, height 0·28, breadth 0·09.

This species and *Pleurotoma* (*Mangelia*) *macra*, Wats., belong to a group very peculiar, and evidently numerous in the North Atlantic, as there are young specimens of five other species from the same neighbourhood, evidently all distinct, but stamped strongly with the same features, of a thin glossy shell, obsolete sculpture, a slight gemmate keel, and the peculiar large, conically globose, minute-tipped, smooth, longitudinally ribbed apex.

77. *Pleurotoma* (*Mangelia*) *tiara*, Watson (Pl. XXI. fig. 7).

Pleurotoma (*Mangelia*) *tiara*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 440.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 56. May 29, 1873. Lat. 32° 8′ 45″ N., long. 64° 59′ 35″ W. Off Bermuda. 1075 fathoms. Coral mud. Bottom temperature 38°·2.

Shell.—High and narrow, rather strong, white, spiralled, with a high subscalar spire ending bluntly in a small tip, with a very small body-whorl, a short contracted base, and a very short small snout. *Sculpture:* Longitudinals—there are a number of hair-like sinuous lines, which in the sinus-area are like bars; they are parted by flat intervals of about three or four times their width: the lines of growth are very faint. Spirals—there are on each whorl two strong sharp keels which nearly trisect the whorl; the lower of these is sometimes feeble; marginating the suture below is a fine thread; on the base are 8 or 10 sharp and prominent threads of varying and unequal strength; at the upper end of the snout is another strong thread; below this is a little furrow, answering, as in *Cerithiopsis*, to a small nick at the point of the pillar. On the pillar are from two to four

[1] Hence the name.

more threads of variable strength. *Colour* porcellanous white. *Spire* high, narrow, conical, subscalar. *Apex* a little bluntly conical, consisting of 4 to 5 whorls, of which the upper ones are small and smooth; the last two are ornamented with minute ribs or elongated bosses. *Whorls* about 10 in all, high and narrow, of very slow and regular increase, slightly convex, with a sloping shoulder, rather cylindrical in the middle, and slightly contracted below; the last whorl is small, very slightly tumid, with a very contracted base and a small subcylindrical snout, the point of which is slightly reverted and nicked. *Suture* very minute and concealed, in spite of the contractions of the whorls and the inferior margination. *Mouth* short, small, and pear-shaped, not narrow, triangularly pointed above, and ending below in the short, rather open canal. *Outer lip* a pretty regular curve; its edge is prominent below with a low shoulder above, leaving a wide funnel-shaped opening for the rather shallow rounded sinus. *Inner lip* very narrow, thin, and short, dying out early on the narrow twisted oblique edge of the pillar, which is slightly reverted along the side of the canal so as to produce a small twisted furrow. The line of junction of the pillar and the body is very concave. H. 0·32 in. B. 0·11. Penultimate whorl, height 0·07. Mouth, height 0·12, breadth 0·06.

The specimen of this species from Station 56 has the spiral threads very much finer than that from Station 24. The species has a strong superficial likeness to *Pleurotoma emendata*, Monterosato =*Pleurotoma renieri*, Phil., nec Scac.; but that is a broader and larger shell, has a more tumid body-whorl and a longer base; its whorls are not so high-shouldered, are more convex, are not so strongly keeled, are not so deeply and strongly parted by the square impressed suture; and the apex is of the large blunt dome type, consists of only two whorls, and is simply carinated.

2. *Clathurella*, Carpenter, 1856.

Millet's earlier name (1826) of *Defrancia*, which has been largely adopted, is preoccupied by Bronn (1825) for a genus of Polyzoa, which had indeed previously been named *Pelagia* by Lamouroux (1821), but that name having been preoccupied by Péron in 1809 for a genus of the Acalephæ, the *Defrancia* of Bronn must come into use. The *Defrancia* of Millet must, therefore, unfortunately be dropped, and Carpenter's name, *Clathurella*, adopted.

Species.

1. *Clathurella crispata*, Jan.
2. *Clathurella formosa*, Jeffr.
3. *Clathurella leufroyi*, Mich.
4. *Clathurella reticulata*, Renier.
5. *Clathurella hormophora*, Wats.
6. *Clathurella chariessa*, Wats.
7. *Clathurella pachia*, Wats.
8. *Clathurella pudens*, Wats.
9. *Clathurella araneosa*, Wats.
10. *Clathurella streptophora*, Wats.
11. *Clathurella circumvoluta*, Wats.
12. *Clathurella chyta*, Wats.
13. *Clathurella perpauxilla*, Wats.
14. *Clathurella perparva*, Wats.
15. *Clathurella kala*, n. sp.
16. *Clathurella homœotata*, n. sp.
17. *Clathurella porcellana*, n. sp.
18. *Clathurella phyxanor*, n. sp.
19. *Clathurella* (*Daphnella?*) *monoceros*, Wats.
20. *Clathurella* (*Daphnella*) *compsa*, Wats.
21. *Clathurella* (*Daphnella*) *aulacoessa*, Wats.

1. *Clathurella crispata* (Jan).

Pleurotoma crispata, Jan, Cat. rer. nat. Museo Crist. et Jan, p. 9, No. 25.
" " Philippi, Enumeratio Moll. Sicil., vol. i. p. 200, vol. ii. pp. 170, 175, pl. xxvi. fig. 12.
" " Hörnæs, Foss. Moll. Wien, vol. i. p. 367, pl. xxxix. fig. 13.
" " Reeve, Conch. Icon., vol. i. pl. xix. fig. 156.
" " Weinkauff, Conch. Mittelmeeres, vol. ii. p. 121.
Defrancia crispata, Gwyn Jeffreys, Medit. Moll., Ann. and Mag. Nat. Hist., 1870, 4th ser., vol. vi. p. 19.
" " Gwyn Jeffreys, "Travailleur" Dredgings in Bay of Biscay, Ann. and Mag. Nat. Hist., 1880, 5th ser., vol. vi. p. 318, No. 127.
" " Gwyn Jeffreys, Brit. Assoc. Report on "Travailleur" Dredgings, 1880, p. 9, No. 164.
Drillia crispata, Bellardi, Moll. Terr. Terz. Piemonte, &c., vol. ii. p. 131, No. 56, pl. iv. fig. 21.
" " Seguenza, Form. Terz. Calabria, p. 103.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 fathoms. Volcanic mud.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 53′ W. Off Pernambuco. 350 fathoms. Red mud.

Habitat.—Mediterranean, 0 to 250 fathoms (Jeffreys).

Fossil.—From the Middle Miocene onwards (Bellardi), Pleistocene (Weinkauff).

The Marquis of Monterosato (Enumerazione, p. 45) says that the living Mediterranean species *Pleurotoma loprestiana*, Calc., has been confounded with the *Pleurotoma crispata*, Jan. If I have not followed him here it is merely because I do not know the limits of the two species, and therefore think it safer to follow the nomenclature of the British Museum, which has specimens under the name of Jan's species, and it is with these that the Challenger shells agree.

2. *Clathurella formosa* (Jeffreys).

Defrancia formosa, Gwyn Jeffreys, "Travailleur" Dredgings in Bay of Biscay, Ann. and Mag. Nat. Hist., 1880, 5th ser., vol. vi. p. 318, No. 129 (as a MS. name).
" " Gwyn Jeffreys, Brit. Assoc. Report on "Travailleur" Dredgings, 1880, p. 9, No. 166 (as a MS. name).
" " Gwyn Jeffreys, Moll. "Triton" Exped., Proc. Zool. Soc. Lond., 1883, p. 397, No. 9, pl. xliv. fig. 9 (not *Pleurotoma formosa*, Reeve).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of Azores. 1000 fathoms. Pteropod ooze. Bottom temperature 39°·4.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. Off San Miguel, Azores. 1000 fathoms. Volcanic mud.

Station 85. July 19, 1873. Lat. 28° 42′ N., long. 18° 6′ W. Off Palma, Canaries. 1125 fathoms. Volcanic mud.

In this shell the embryonic apex, which consists of four whorls, is sharp and narrow, and the three lower whorls of the four are scored with the characteristic markings of the Clathurellas. The extreme tip is very indistinctly and closely dotted with tubercles, which seem somewhat linearly arranged. Dr Gwyn Jeffreys (Proc. Zool. Soc. Lond., 1873, p. 397, *ut supra*) says that the "point is usually sharp, but sometimes blunt and button-shaped." I have seen nothing like such a variety of form in the apex of any of the Challenger specimens of this species, nor indeed in any shells of the whole *Clathurella* group.

3. *Clathurella leufroyi* (Michaud).

Pleurotoma leufroyi, Michaud, Coq. Viv. Medit., Bull. Soc. Linn. Bordeaux, vol. ii. p. 121, pl. i. figs. 5, 6.
„ *inflata* (not of Jan), Philippi, Enumeratio, vol. i. p. 197, pl. xi. fig. 24.
„ *leufroyi*, Kiener, Iconog., p. 70, pl. xxiv. fig. 3.
„ „ Philippi, Enumeratio, vol. ii. pp. 165, 174.
„ „ Reeve, Conch. Icon., vol. i. pl. xvi. fig. 131.
Mangelia leufroyi, Forbes and Hanley, Brit. Moll., vol. iii. p. 468, pl. cxiii. figs. 6, 7, and pl. RR. fig. 1.
Pleurotoma leufroyi, Hörnæs, Foss. Moll. Wien, vol. i. p. 373, pl. xl. fig. 16.
Defrancia leufroyi, Gwyn Jeffreys, Brit. Conch., vol. iii. p. 366, vol. v. p. 219, pl. lxxxix. fig. 1.
„ „ Weinkauff, Conch. Mittelmeeres, vol. ii. p. 132, sp. 4.
„ „ Gwyn Jeffreys, Medit. Moll., Ann. and Mag. Nat. Hist., 1870, 4th ser., vol. vi. p. 18.
Homotoma leufroyi, Bellardi, Moll. Terr. Terz. Piemonte, &c., vol. ii. p. 274, sp. 13.
Pleurotoma leufroyi, Monterosato, Enumeraz., p. 46.
Homotoma leufroyi, Seguenza, Form. Terz. Calabria, p. 258.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Habitat.—From Scotland to the Mediterranean, 0 to 310 fathoms (Jeffreys), Madeira (my dredgings), Canaries (M'Andrew).

Fossil.—Miocene (Hörnæs), Upper Pliocene (Bellardi), Pleistocene (Weinkauff).

4. *Clathurella reticulata* (Renier).

Murex reticulata, Renier, Tavola Alfabet. d. Conch. Adriat., p. 2.
„ *echinatus*, Brocchi, Conch. Foss. Subap., p. 423 (2d ed., vol. ii. p. 216), pl. viii. fig. 3.
Pleurotoma reticulata, Philippi, Enumeratio Moll. Sicil., vol. i. p. 196, vol. ii. pp. 165, 174.
„ „ Reeve, Conch. Icon., vol. i. pl. xv. fig. 122.
Clavatula cancellata, S. V. Wood, Crag. Moll., vol. i. p. 61, pl. vii. fig. 9.
Defrancia reticulata, Gwyn Jeffreys, Brit. Conch., vol. iv. p. 370, vol. v. p. 220, pl. lxxxix. figs. 3, 4.
„ „ Weinkauff, Conch. Mittelmeeres, vol. ii. p. 128.
Homotoma reticulata, Bellardi, Moll. Terr. Terz. Piemonte, vol. ii. p. 268.
Pleurotoma reticulata, Monterosato, Enumeraz., p. 46.
Homotoma reticulata, Seguenza, Form. Terz. Calabria, p. 257.

Habitat.—Mediterranean and North Atlantic, from Shetland to Madeira.

Fossil.—From the Middle Miocene onwards (Bellardi).

5. *Clathurella hormophora*[1] (Watson), (Pl. XXI. fig. 9).

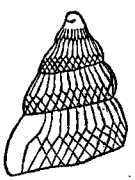
Pleurotoma (Defrancia) hormophora, Watson, Prelim. Report, pt. 10, Journ. Linn. Soc. Lond., vol. xv. p. 457.

Station 23. March 15, 1873. Lat. 18° 24′ N., long. 63° 28′ W. Off Sombrero Island, West Indies. 450 fathoms. Pteropod ooze.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—High and narrow, with no angles anywhere; porcellanous to ivory-white, a high conical spire, with sharp reticulately sculptured tip; the whorls are slightly convex, and have a row of beads round the top of each; the body-whorl and snout are small, and the base short and contracted. *Sculpture:* Longitudinals—none but excessively oblique, faint, hair-like lines of growth. Spirals—there is a pretty little row of rounded tubercles close to the suture at the top of the whorls—about 16 in each. The surface is also very finely and superficially microscopically scratched. *Colour* ivory-white; but when alive probably porcellanous, glossy. *Spire* conical, with scarcely any interruption in the profile-lines. *Apex* consists of 4 conical yellow whorls, rising to a minute tip; the line of junction between these and the first regular whorl has a deep sinus above and a very prominent forward curve below (see fig.) These whorls are ornamented by a system of minute bars, which for the upper half of the whorl run straight downwards; there they split into two and form a very regular reticulation on the lower half of the whorl, each mesh being a square. *Whorls* 11 in all, slightly convex, a little high, of very regular increase, each broadening downwards with great regularity, but very slightly, from the upper to the lower suture; the last whorl is a very little tumid, but short and small, and with a short contracted base. *Suture* very little impressed, but rendered definite by the very slight prominence of the edge of the gemmed band below. *Mouth* oblong, pointed above and below. *Outer lip* has a very regular and slight curve from end to end; the edge sweeps very much back at the front of the shell; in the middle of the mouth it is excessively prominent and is rounded, leaving between its shoulder and the body-whorl a very deep, rounded, and open-mouthed sinus. *Inner lip* very thinly excavated in the substance of the shell; it runs very far forward on the bluntly rounded, twisted, and at the point oblique edge of the pillar, which is short and narrow, and at its junction with the body very markedly concave. H. 0·4 in. B. 0·14. Penultimate whorl, height 0·08. Mouth, height 0·16, breadth 0·08.



Clathurella hormophora, Wats.

[1] ὁρμοφόρος, collar-girt.

I know nothing with which to compare this remarkable species. *Clavatula albicans*, Hinds, "Sulphur," p. 23, No. 84, pl. vii. fig. 8, has somewhat of its general features; but there resemblance ends. *Trochus* (*Margarita*) *nitens*, Jeffr., has a somewhat similarly ornamented suture; as has also *Cithna margaritifera* (Wats.).

6. *Clathurella chariessa*[1] (Watson), (Pl. XX. fig. 6).

Pleurotoma (*Defrancia*) *chariessa*, Watson, Prelim. Report, pt. 10, Journ. Linn. Soc. Lond., vol. xv. p. 458.

Station 24. March 25, 1874. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of Azores. 1000 fathoms. Pteropod ooze. Bottom temperature 39°·4.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. San Miguel, Azores. 1000 fathoms. Volcanic mud.

Station 85. July 19, 1873. Lat. 28° 42′ N., long. 18° 6′ W. Off Palma, Canaries. 1125 fathoms. Volcanic mud.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—High, biconical, a little tumid, carinated, white, thin, faintly, shortly, and obliquely ribbed, with a high, subscalar, small-pointed spire, and a slightly tumid little-contracted base, produced into a long narrow snout. *Sculpture:* Longitudinals—there are on the last whorl about 20 short oblique folds, which die out almost immediately; they are highest at their origin below the sinus-area, and are parted by flat intervals somewhat broader than they; they diminish in number up the spire, and do not reach the lower suture: there are further obsolete lines of growth, which in the sinus-area are strong, and at the suture form sharp little folds parted by wide unequal intervals. Spirals—the sutural area is wide, but scarcely concave; it is bordered by the blunt angulation forming the keel, which is greatly strengthened by the prominence of the origin of the longitudinal ribs. From the keel downwards the shell is covered by superficial, flattened, irregular, and unequal threads parted by narrower shallow furrows; these become slightly stronger and more regular on the snout. *Colour* ivory-white; the apex is ruddy brown. *Spire* conical, high, rather narrow, subscalar, sometimes scalar from the squareness with which the sinus-area stands out in the upper whorls. The lines of profile are very much interrupted by the prominence of the keel. *Apex* small, ruddy brown, consisting of 4½ conical whorls; of these the lower two-thirds is covered with very minute reticulations, while the upper part is scored with minute curved bars, the surface between which is very slightly spirally marked; it ends in a minute tip a

Clathurella chariessa.

[1] χαρίεις, graceful.

little bent down on one side. *Whorls* 10 in all, of regular proportions and uniform increase; they are conical above and cylindrical below the keel; the last whorl is slightly tumid, and contracts very gradually to a long and small snout. *Suture* extremely minute, as each whorl laps up on the one above it. *Mouth* oblong, pointed above, and drawn out into a long narrow canal below. *Outer lip* is pretty regularly arched from the body to the canal, from which point it is drawn out rather straight; its edge advances in the middle very prominently; above this it forms a high shoulder, between which and the body-whorl lies the deep, rounded, and very wide-mouthed sinus; towards the front of the mouth the edge runs straight, then retreats, so as to form a broad, slight, small sinus at the top of the canal, and then runs straight. *Inner lip:* there is a thin glaze excavated slightly in the substance of the shell. The pillar is long, narrow, and fine-pointed, with a slight swelling coiling round its base, where its junction with the body is but slightly concave. H. 0·85 in. B. 0·35. Penultimate whorl, height 0·16. Mouth, height 0·43, breadth 0·2.

This species has a considerable likeness to *Pleurotoma torquatum*, Phil.; but that is a larger, broader, stumpier form, has the individual whorls shorter, more strongly keeled, ornamented with little rounded tubercles instead of with narrow, pinched-up, very oblique riblets; has also a much more horizontal suture; the whorls, too, are not cylindrical, but contract from the keel to the lower suture; the base is much more drawn in, and the pillar much shorter; the whole texture also and sculpture is much stronger than in the Challenger species.

The specimens from Station 24 and Station 85 are markedly stumpier in form, more sharply keeled, and with a higher shoulder and a rather smaller embryonic apex; but the whole details of sculpture are identical.

7. *Clathurella pachia*[1] (Watson), (Pl. XIX. fig. 5).

Pleurotoma (*Defrancia*) *pachia*, Watson, Prelim. Report, pt. 10, Journ. Linn. Soc. Lond., vol. xv. p. 460.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Ovate, white, smooth, of rounded outlines, with a rather high, small, and sharp-pointed apex, a swollen body-whorl, and a rounded base produced into a small, broad, one-sided snout. *Sculpture:* Longitudinals—there are only very fine hair-like lines of growth, of which here and there at regular intervals one becomes much more strongly marked than the others. Spirals—the whole surface is sparsely scored with very shallow, scratched-out, narrow furrows, parted by flat intervals of from two to six times their breadth; in the sinus-area they are a little closer than elsewhere; on the snout they gradually broaden till their intervals assume the form of slight rounded threads. *Colour* like a shaving of ivory, from its thinness, gloss, and colour. The apex is buff. *Spire*

[1] παχύς, fat.

conical. *Apex* consists of 4 very small, conical, scarcely convex, buff whorls, the upper part of which bears straight little bars, and the lower part is minutely reticulated; below the buff-coloured surface the shell is porcellanous. *Whorls* 9 in all, slightly straight and sloping below the suture, convexly rounded above, cylindrical below; the last is a little tumid, with a rounded base produced into a short, broad, lop-sided snout. *Suture* very slight, as the inferior whorl laps up on the one above it, but it is defined by the curve of the whorls. *Mouth* oval, pointed above; there is scarcely any canal below. *Outer lip* very thin, a little contracted above, and patulous below; its curve is somewhat flattened about the periphery; its edge forms a very regular curve with a slight shoulder above, between which and the body lies the broad, shallow, rounded sinus. *Inner lip* is a thin narrow glaze which very soon dies out on the oblique, twisted, fine edge of the short conical pillar, beyond whose point the front of the shell advances a good deal: the junction of the pillar and the body is concave. H. 0·46 in. B. 0·22. Penultimate whorl, height 0·11. Mouth, height 0·24, breadth 0·11.

This species slightly resembles *Daphnella supercostata*, E. A. Sm., but is more obese, the mouth is shorter, the edge of the sinus is not thickened, and the apex is sharp and sculptured, while in that it is plain and blunt. It most resembles perhaps *Pleurotoma translucida*, Wats.; but that is smooth, and has a blunt rounded apex.

8. *Clathurella pudens* (Watson), (Pl. XIX. fig. 2).

Pleurotoma (*Defrancia*) *pudens*, Watson, Prelim. Report, pt. 10, Journ. Linn. Soc. Lond., vol. xv. p. 461.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Small, oblong, white, smooth, with a high, subscalar, small, and sharp-pointed apex, a short and scarcely swollen body-whorl, and a conical base produced into a broadish, triangular, lop-sided snout. *Sculpture:* Longitudinals—besides hair-like lines of growth, there are some faint, very oblique, upwardly convex folds, which are obsolete on the earlier and on the last whorls. Spirals—the surface is covered with superficial rounded threads which, obsolete in the sinus-area, are feeble on the body, but sharper and more distinct on the base and snout. There is a very faint angulation below the sinus-area. *Colour:* the shell is thin, semi-transparent white, with hardly any gloss. *Spire* conical, subscalar from the slight short tumidity below the suture. *Apex* consists of 4 embryonic whorls, which are buff, darkening to orange at the tip; they are a little broadly conical, rounded, with a slight angulation, and parted by a distinct suture; they rise to a very minute, spirally scratched, round, and very slightly prominent knob; they are sculptured with raised bars, which are straight and simple above, but oblique and crossed below. *Whorls* $7\frac{1}{2}$ in all; they are slightly concave and shouldered in the sinus-area, which is bordered

by a faint angulation, below which they are slightly tumid, without any contraction into the inferior suture; the last, which is rather small, has a conical base produced into a broadish, triangular, one-sided snout. *Suture* slight, inasmuch as the inferior whorl laps up on the one above; but there is an appreciable constriction. *Mouth* oblong, pointed above; there is no canal below except the channel behind the pillar. *Outer lip* very thin; its curve is somewhat flattened; its edge forms a very regular sweep with a rather high shoulder above, between which and the body lies the deepish, but broad, open-mouthed sinus. *Inner lip* very thin and narrow, dying out early on the scarcely oblique or twisted edge of the longish, straight, and conical pillar, the point of which comes short of the lip-edge, and whose junction with the body is concave. H. 0·21 in. B. 0·1. Penultimate whorl, height 0·04. Mouth, height 0·1, breadth 0·05.

This species somewhat resembles *Clathurella pachia*, Wats., but is in all its proportions very much smaller; the whorls, especially the last, are very much less tumid, the spire is distinctly scalar, and the sculpture is very markedly different. Than *Daphnella attenuata*, E. A. Sm., besides the different apex, the whole shell is smaller, more attenuated, and more delicate.

9. *Clathurella araneosa* (Watson), (Pl. XIX. fig. 1).

Pleurotoma (Defrancia) araneosa, Watson, Prelim. Report, pt. 10, Journ. Linn. Soc. Lond., vol. xv. p. 462.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Small, yellowish, minutely ribbed and faintly spiralled, with a small, broadish, scalar, sharp-pointed spire, a slightly swollen body-whorl and rounded base, produced into a square, prominent, one-sided snout. *Sculpture:* Longitudinals—there are exceedingly fine, faint, microscopic threads in the line of growth; at distances of about $\frac{1}{100}$ of an inch apart these rise into small, sharpish, round-topped riblets, which run continuously from the suture to the snout, though on the base and below it they become feebler; on the earlier whorls these are, of course, less marked and more close set: in the intervals of the larger riblets one or two fainter ones occasionally appear. Spirals—below the slightly concave sinus-area is an obtuse angulation, accentuated by the slight prominence of the two small spiral threads which lie there; below this there are on the body-whorl above the lip-corner about 5 other small spirals not so prominent; on the lower part of the body and on the base they are weaker, but become stronger again towards the point of the base and on the snout; the intersection of these with the spirals produces a slight spider-web like appearance.[1] *Colour* yellowish, without gloss; the apex is buff. *Spire* rather short and broad, scalar, and conical. *Apex* consists of $4\frac{1}{2}$ very small, conical, scalar, convex, buff whorls, parted by a deep suture; the first whorl and a half is closely spirally striated with about

[1] From this the name is derived.

10 minute threads: these threads, which are at first almost simple, are by degrees more and more fretted by longitudinals, which break up the threads into minute tubercles: toward the end of the second whorl longitudinal and oblique bars appear somewhat vaguely and confusedly; but presently the distinct arrangement appears of short little bars above and a net-work on the lower part of the whorls. *Whorls* 7½ in all, but the shell is very likely hardly full-grown: they are almost horizontal above, with a flat or faintly concave sinus-area, slightly angulated at the shoulder, and below this cylindrical or a very little convex to the lower suture; the last is long, a little tumid, with a long pillar-line on the left side, and a small square prominent snout on the right. *Suture* very slight in consequence of the up-lap of the whorls at their junction, but of course strongly marked by the angulation of the line of junction. *Mouth* oblong, triangularly pointed above, and ending in a very square broadish canal below. *Outer lip* flatly arched, with a slight angulation below the sinus-area and a marked pinch-in where it turns to form the canal; its edge-line is very straight and scarcely prominent, but has a high shoulder above, between which and the body lies the deepish, rounded, and open-mouthed sinus. *Inner lip* very thin and narrow, and dying out very early on the scarcely oblique, twisted, sharp pillar-edge; its line across the body is very short and convex, but is very concave at its junction with the long, scarcely oblique pillar. H. 0·22 in. B. 0·1. Penultimate whorl, height 0·04. Mouth, height 0·13, breadth 0·04.

This is like *Clathurella pudens*, but differs markedly in its more angular outlines and square pinched-out snout.

10. *Clathurella streptophora*[1] (Watson), (Pl. XIX. fig. 8).

Pleurotoma (*Defrancia*) *streptophora*, Watson, Prelim. Report, pt. 10, Journ. Linn. Soc. Lond., vol. xv. p. 464.

North Atlantic. April or May 1873. (Station not entered.) Over 1000 fathoms.

Shell.—White, strong, porcellanous, stumpy, with a very short body-whorl, a double necklace of tubercles below the suture, a rather high, small-tipped, buff-pointed spire, a rounded base, small, broadish, reverted snout, and a twisted pillar. *Sculpture:* Longitudinals—there are about 12 narrow ridge-shaped ribs on each whorl: they originate below the sinus-area in conical-shaped little tubercles, and die out at the point of the base; they are parted by shallow rounded furrows of about three times their breadth. The lines of growth, which are pretty strong, cover the whole surface. Spirals—close below the suture is a row of small, rather coarse, and not quite regular, rounded tubercles, about 24 to 26 in number: these form an angulated ring as a subsutural margination; adjacent to them is the row of more prominent costal conical-shaped tubercles; the body-whorl below these is feebly striate. Toward the end of the base is a sharpish furrow succeeded

[1] στρεπτοφόρος, necklace-wearing.

by a broadish flat band, below which on the extreme point of the base is a series of 4 sharp narrow threads and furrows, followed by about as many more, smaller and more crowded on the snout. *Colour* porcellanous white, glossy, with a buff tip. *Spire* long relatively to the shell, shortly scalar, convexly conical. *Apex:* the extreme tip is broken, but had evidently been very small; two whorls remain, rounded, high, conical, parted by a distinct suture, buff-coloured, minutely straight-barred above and reticulated below. *Whorls* 5, below the embryonic apex; probably about 9 in all; the rows of infrasutural tubercles give them a minute double keel above with an oblique slope at this part, below which they are cylindrical, or very slightly contracted to the lower whorl: this contraction is distinct on the last whorl, which is very small. The base is rounded and contracted, and ends bluntly in a triangular snout with a slightly reverted point; the advance of the pillar on the left side is rather more than one would have expected. *Suture* small, but very strongly marked. *Mouth* ovate, contracted and angulated above, produced into the broad, open, and oblique canal below. *Outer lip* confused by having been broken and mended; but apparently thickened and probably marginated above, very flatly curved with great regularity from end to end; the edge runs very straight, with little of prominence, and forms a very slight and shallow rounded sinus near, but not quite close to, the suture, from which it seems to be separated by an extension of the upper beaded line. *Inner lip* broad, formed by a glossy pad above, and below it is slightly excavated into the substance of the shell. It runs straight out along the pillar to the very point, where it meets the very oblique, twisted, and thickened edge: the pillar is thus very short, stumpy, and obliquely cut off in front, reminding one of a *Nassa;* and its whole point is a little twisted and reverted. H. 0·31 in. B. 0·13. Penultimate whorl, height 0·06. Mouth, height 0·13, breadth 0·07.

11. *Clathurella circumvoluta* (Watson), (Pl. XXI. fig. 1).

Pleurotoma (Defrancia) circumvoluta, Watson, Prelim. Report, pt. 10, Journ. Linn. Soc. Lond., vol. xv. p. 465.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—White, strong, with a high, scalar, small, buff-tipped spire, an excessively small body, and a contracted conical base. *Sculpture:* Longitudinals—there are on each whorl about 14 slight, narrow, ridge-shaped, round-topped, oblique and slightly irregular riblets; they rise sharply in obscure tubercles below the sinus-area, and die out at the point of the base; they are parted by shallow rounded furrows of more than twice their breadth. The sinus-area is scored by minute cusp-like remote bars, which generally are not continuous, but are interrupted about the middle, and are more numerous on the lower than the upper half of the area: the lines of growth are extremely fine. Spirals—

the sinus-area is occupied by a broadish, square, impressed furrow; below this there is a square-edged shoulder caused by the projection of the ribs at their origin; this forms a blunt but strongish keel. The rest of the whorl is covered by about 12 fine rounded threads (exclusive of those belonging to the snout, which is broken); the two threads at the keel are close-set; the others are pretty equal and equally arranged; on the penultimate whorl there are about 8 of these threads. *Colour* dead white, probably porcellanous when fresh; the apex is buff or sandy-coloured. *Spire* high, scalar, conical. *Apex* small, high, conical, with the typical straight bars above, and obliquely reticulated ones below; the two or three of the very tip are broken. *Whorls* 6 below the apex; they are short and broad, of slow regular increase, with a drooping slightly concave shoulder, keeled, and from the keel contracting conically to the inferior suture; the last whorl is very short and small, with a rounded convexly conical base: the extreme point of the pillar and snout is broken. *Suture* obtusely, but angularly, impressed. *Mouth* oval. *Outer lip* almost semicircular, with an angle at the keel; its edge advances very far forward below; above it forms a very deep, wide, funnel-shaped sinus close up to the suture. *Inner lip* slightly excavated, with a very small border. H. 0·36 in. B. 0·13. Penultimate whorl, height 0·06. Mouth, height 0·1, breadth 0·08. (These measurements are of necessity, from the broken state of the mouth, somewhat hypothetical; but they are at least not exaggerated.)

12. *Clathurella chyta*[1] (Watson), (Pl. XVIII. fig. 4).

Pleurotoma (Defrancia) chyta, Watson, Prelim. Report, pt. 10, Journ. Linn. Soc. Lond., vol. xv. p. 466.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of Azores. 1000 fathoms. Pteropod ooze. Bottom temperature 39°·4.

Shell.—White, conical, ribbed, with a high, subscalar, small-pointed apex, a short tumid body-whorl, a rounded contracted base, and a small snout. *Sculpture:* Longitudinals—there are on the last whorl 14 ridge-shaped, round-topped, curved, oblique ribs: they are not strong, originate in small rounded beads at an angulation below the sinus-area, and die out on the base: they are parted by shallow rounded furrows of double their breadth; on the first regular whorl they appear as simple beads 9 in number; on the next whorl they assume the form of straight riblets, whose obliquity increases on each successive whorl: the lines of growth, which are quite independent of the riblets, are very slight. Spirals—there is a row of quite separate, very small, elongated tubercles below the suture: the sinus-area is bordered on its lower side by a very faint and small furrow: the angulation of the whorl below this is chiefly due to the row of beads in which the ribs originate, and here there are several very minute threads; 9 somewhat stronger, equal, and equally parted threads occupy the body from this angle downwards; about 5

[1] χυτός, cast.

others, stronger and wider apart, occupy the base, and about 4 more the snout; here and there a much finer thread occurs in the intervals. *Colour* white. *Spire* high, subscalar, conical. *Apex* small, high, conical, with tumid whorls; the sculpture is typical, *i.e.*, with straight bars above and obliquely reticulated ones below; the two or three of the very tip are broken. *Whorls* 6 to 7, exclusive of those which form the apex, of regular increase, with a drooping concave shoulder, keeled, and below the keel almost cylindrical, but with a very slight contraction to the lower suture; the last whorl is short, tumid, with a rounded base produced into a short, broad, triangular, one-sided snout. *Suture* very slightly impressed and extremely small, as the inferior whorl laps up on the one above it. *Mouth* angularly oval, pointed above, broad in the middle, and obliquely prolonged below into the short canal. *Outer lip* concave in the sinus-area and angulated at the keel; it forms from this point a very regular curve to the front: the edge, which sweeps far out below, forms rather a low shoulder above, between which and the body lies the deep, rather narrow, open-mouthed, rounded sinus. *Inner lip* is excavated, has a slight raised border outside of it, is rather broad, and continues to the extreme point of the short narrowish pillar, which is rather obliquely cut off with a rounded twisted edge, and whose junction with the body is deeply concave. H. 0·54 in. B. 0·24. Penultimate whorl, height 0·1. Mouth, height 0·24, breadth 0·13.

This species has some resemblance to *Clathurella formosa*, Jeffr., and to another Challenger species from Station 73, for which I had chosen the name *Clathurella smileuta*, unfortunately a young specimen. The distinction between the present species and these others is expressed by the name *chyta*;[1] while *Clathurella smileuta*[2] is like a thing blocked out of the solid. *Clathurella formosa*, Jeffr., again resembles something on which superficial ornament has been laid and attached by melting. In all three cases there is resemblance in the forms and sculpture; but under that resemblance there is the strongest difference.

13. *Clathurella perpauxilla* (Watson), (Pl. XXII. fig. 7).

Pleurotoma (*Defrancia*) *perpauxilla*, Watson, Prelim. Report, pt. 10, Journ. Linn. Soc. Lond., vol. xv. p. 468.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Very small, high and narrow, white, ribbed and spiralled, with convex whorls, a small elongated regular body, impressed suture, a high, conical, small-tipped spire, a rounded base, and a small, longish, triangular one-sided snout. *Sculpture:* Longitudinals—there are on the latter whorls about 9 biggish flatly rounded ribs, parted by equally broad open rounded furrows; in the upper whorls they barely reach the lower suture; on the last they hardly extend to the base; they originate at a shoulder below

[1] χυτός, cast. [2] σμιλευτός, chipped out.

the sinus-area; they are thus very short. The lines of growth are very faint, except in the sinus-area, where, round the top of the whorls, the old sinus-scars form a series of short, sharp, regular, remote, little riblets. Spirals—below the sinus-area is a feeble thread; the periphery of the whorls is marked by two sharp, square-topped threads, which form a double keel; the upper one is very near the feeble thread above mentioned: the interval between the carinal threads is about four times their breadth; somewhat more remote, a third thread, equally strong, appears on the last whorl, coming out exactly from the oral angle and defining the base; above and below this, at about equal distances, are two feebler threads; the rest of the base is bare, but the entire snout is covered with very small spiral threads. The whole surface is very minutely scored with microscopic spiral lines. *Colour* frosted white, with a buff apex. *Apex:* there are four embryonic whorls, which form a high cone with a slightly impressed suture, and rise to a small rounded prominent tip: the sculpture is typical, the tip being scored with some 10 or 12 minute sharp spiral threads, while the other whorls have straight bars on the upper part and reticulated bars below, only the part occupied by the straight bars is exceptionally short. *Whorls* 7 to 8, of regular increase, with a drooping shoulder, a double carination, and a marked contraction to the inferior suture; the last whorl is very regular in form, with a slightly contracted base, from which projects a small triangular one-sided snout. *Suture* slightly impressed, flatly but minutely marginated below. *Mouth* oval, angulated above, and prolonged into a rather broad and longish canal below. *Outer lip* very regularly curved, but drawn out straight along the canal: its edge, which is rather prominently curved below, forms a somewhat low shoulder above, between which and the body lies the wide-mouthed, deep, rounded sinus. *Inner lip* rather broad and distinct; it is very early cut off on the short pillar at the very oblique twisted edge, which then runs on as a thin sharp margin to the canal: the junction of the pillar and body is rather deeply concave. H. 0·15 in. B. 0·06. Penultimate whorl, height 0·026. Mouth, height 0·06, breadth 0·03.

This is a very small species; but I think one of the specimens is very nearly full-grown.

14. *Clathurella* (?) *perparva*, Watson (Pl. XXII. fig. 8).

Pleurotoma (*Defrancia*?) *perparva*, Watson, Prelim. Report, pt. 10, Journ. Linn. Soc. Lond., vol. xv. p. 469.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Small, high and narrow, ribbed and spiralled, with convex whorls, a small short body, impressed suture, a high, conical, scalar, small-tipped spire, a rounded base, and a small, short, triangular, one-sided snout. *Sculpture:* Longitudinals—there are on the last whorl 12, on the earlier one or two fewer, small, straight, rounded ribs, which

originate somewhat prominently in an angle of the whorls below the sinus-area, and run down to the point of the base, but do not extend to the snout; they are parted by rounded furrows of nearly three times their width: close below the sinus is a crowded row of very short, small, curved bars—the old sinus-scars. The whole surface is closely, very regularly, and rather sharply scored with lines of growth. Spirals—the earlier whorls are keeled by three equal, equally prominent, and equally parted rounded threads; on the last whorl others, weaker, appear between these; the lowest of the three loses in importance, and about seven others, not all quite equal nor quite equally parted, occupy the base, while four or five more somewhat similar cover the snout. *Colour* probably white, but stained with mud in which the specimens have lain. *Apex:* there are four embryonic whorls, which form a high cone with a slightly impressed suture; the extreme tip has evidently been small, but is broken: the sculpture is not typical, but consists of a series of straight bars ornamented with rough and projecting tubercles; these cross the whorls, but at the top and bottom of the whorls another set of short little bars occur between the larger ones. *Whorls:* these are 9 in all, of regular increase, rather short; above they are slightly concavely horizontal, at the three keels cylindrical, and below this contracted into the inferior suture; the last whorl is very short, a very little swollen, with a very short rounded base and a small snout. *Suture* impressed, but open. *Mouth* small, oval, rounded above, and drawn out into a canal below. *Outer lip* straight in the sinus-area, high-arched in the middle, concave in front, and straight along the canal: the edge forms a high shoulder above, between which and the body is the open, deep, rounded sinus. *Inner lip* thinly excavated, very early cut off at the sharp oblique edge of the pillar. H. 0·23 in. B. 0·09. Penultimate whorl, height 0·045. Mouth, height 0·09, breadth 0·05.

This species is classed under *Clathurella* only provisionally with a mark of interrogation, in consequence of the departure of the embryonic whorls from the typical sculpture. That sculpture and form of apex may probably serve as the safest basis of classification in the whole group.

15. *Clathurella cala*,[1] n. sp. (Pl. XXVI. fig. 11).

Station 335. March 16, 1876. Lat. 32° 24′ S., long. 13° 5′ W. South-east Atlantic. 1425 fathoms. Pteropod ooze. Bottom temperature 37°.

Shell.—Thin, delicate white, angulated, obliquely plicate, spiralled, scalar, with a conical spire, a chestnut tip, a deep suture, short body-whorl, very contracted base, and a short, small, straight snout. *Sculpture:* Longitudinals—there are on the last whorl about 15 (the number slowly decreases up the spire) narrow pinched-up oblique ribs which take their origin below the sinus-scar and die out on the base; they form a high hunchy shoulder to the whorls; on the upper whorls they extend to the lower suture;

[1] καλός, beautiful.

the whole surface is scored with fine hair-like lines of growth. Spirals—there are feeble rounded distant threads which do not extend to the sinus-area; the broad flat intervals have much finer threads, generally one or two; on the snout the threads are all alike and somewhat closer than above. The upper whorls are right-angled at the shoulder, but the keel becomes obsolete on the body-whorl. *Colour* white. *Spire* rather high, conical, scalar, sharp. *Apex* consists of $3\frac{1}{2}$ very small turbinate whorls, of which the extreme tip is immersed and tabulate; they are chestnut-coloured, and are scored with excessively fine threadlets, which are straight and longitudinal above but cancellate on the lower part of the whorls; the last of these embryonic whorls ends with a deeply sinuated outer lip. *Whorls* $5\frac{1}{2}$, in addition to those of the apex; they increase rapidly in width more than in height; above they have a flat shoulder, below which they are bluntly angled, and from this point they are shortly cylindrically convex; the last whorl is broad and short, with a round but rapidly contracted base, which runs out into a very small, short, straight, lop-sided snout. *Suture* horizontal, lapping up on the superior whorl and only distinct from the angle at which the whorls meet. *Mouth* short and pear-shaped, angled above and channelled below. *Outer lip* very thin; it has a wide U-shaped sinus lying close up to the suture, from which it is separated by a very minute shelf; below the sinus the edge sweeps prodigiously forward and then runs straight down the snout. H. 0·55 in. B. 0·30. Penultimate whorl, height 0·1. Mouth, height 0·31, breadth 0·17.

This species in general character resembles *Clathurella formosa*, Jeffr., but is very much larger, has a much larger and more prominent shoulder to the whorls, and a blunt instead of a sharp apex.

16. *Clathurella homœotata*,[1] n. sp. (Pl. XXVI. fig. 12).

Station 106. August 25, 1874. Lat. 1° 47′ N., long. 24° 26′ W. Mid-Atlantic. 1850 fathoms. Globigerina ooze. Bottom temperature 36°·6.

Shell.—Thin, delicate, pale chestnut, angulated, feebly plicate, spiralled, subscalar, with a high conical spire, chestnut-tipped, suture distinct, a tumid body-whorl, a short rounded base, and a broad, triangular, lop-sided snout. *Sculpture:* Longitudinals—the whole surface is scored with fine unequal hair-like lines of growth, of which on the shoulder at about equal distances one is plicated; on the upper whorls these folds form short, very oblique, feeble riblets (there are about 25 on the penultimate whorl), while on the body-whorl these are very obsolete but more numerous. Spirals—in the sinus-area there are very faint traces of dense spiral texture; just above the shoulder two or three small close-set furrows appear, and from the shoulder down to the point of the shell the surface is scored with shallow, crimped, rounded little furrows, which are much narrower than

[1] ὁμοιότατος, very like, so called from its resemblance to *Clathurella chariessa*, Wats.

the flat intervals which part them but become stronger and closer toward the point of the shell; below the middle of the whorls there is an obtuse angled keel forming the edge of the shoulder. *Colour* transparent, under a pale, membranaceous, glossy, chestnut epidermis. *Spire* high, conical, subscalar. *Apex* is conically turbinate and consists of $4\frac{1}{4}$ small, convex, chestnut-coloured whorls, of which the last has a deeply sinuated lip-edge; they are scored with fine raised threads, which on the upper part of the whorls are curved and below are reticulated. *Whorls* $5\frac{1}{2}$ besides the embryonic apex; above they have a sloping, slightly concave shoulder; about the middle or a little below it they are carinated, below the keel they are cylindrical; the body-whorl is somewhat tumid with a rounded convex base, which contracts gradually to a blunt triangular snout, which is not in the least emarginate at the point. *Suture* slightly oblique, very fine, but made distinct by the angulation at which the whorls join. *Mouth* oval, strongly pointed above and below, where there is no proper canal at all. *Outer lip* has a very deep, broad, open sinus which lies quite up to the suture; from the sinus the thin lip-edge takes a prodigious sweep forward and then in front sweeps back to the point of the pillar. *Inner lip* shallowly excavated, glazed, short across the body, concave at the base of the pillar, which is narrow, quite straight, and only cut off and twisted at the extreme point. H. 0·81 in. B. 0·41. Penultimate whorl, 0·14. Mouth, height 0·44, breadth 0·25.

I have named this shell from its extreme resemblance to *Clathurella chariessa*, Wats., but the proportions of the shell and its minute sculpture are quite different; this being shorter, broader, more angulated, and with a smaller apex.

17. *Clathurella porcellana*,[1] n. sp. (Pl. XXVI. fig. 13).

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Light but strong, porcellanous, angulated, tuberculately ribbed, spiralled, subscalar, with a high conical spire, chestnut-tipped, with a distinct suture, a longish body-whorl, a rounded produced base, and a drawn-out, truncated, one-sided snout. *Sculpture:* there are crowded unequal lines of growth, which at the suture are gathered into fine distant puckers on the angle of the whorls; these puckerings rise on the upper whorls into finely and sharply tubercled straight riblets, which on the body-whorl are numerous, obsolete, and oblique; on the penultimate whorl there are about 20 of them. Spirals—in the sinus-area there are just perceptible traces of spiral lines; about the angle of the whorls small impressed furrows begin to appear; on the whole body these are strong, equal, and parted by broad flat intervals; toward the point of the base they become stronger, and generally have a minute thread in the bottom; on the snout they become

[1] So called from its texture.

more crowded and parted by rounded threads of the same strength and form as themselves; the angle of the whorls occurs about the middle of each, and is sharp above, but feeble and blunt on the body-whorl. *Colour* porcellanous white, under a straw-coloured membranaceous epidermis. *Spire* high, conical, subscalar. *Apex* is very small and (apparently, for the tip is broken) sharp; two whorls remain, 1½ to 2 have been broken; they are russet-yellow, the last ends in a sinuated lip; the upper part of each is scored, with short straight bars above and cancellations below. *Whorls* 6½ besides those of the apex; above they have a sloping, just appreciably concave shoulder, about the middle each is obtusely carinated; this keel is sharp above, but very feeble on the elongated rounded body-whorl; the base is drawn out into a longish triangular snout, which is squarely truncated in front. *Suture* oblique, fine, but distinct. *Mouth* elongately pear-shaped, angulated above, and broadly, obliquely channelled below. *Outer lip* thin, well but flatly curved; it has a very deep, open sinus, which lies close up to the suture; below this the lip-edge sweeps very far forward, and again retreats towards the point of the shell. *Inner lip:* a barely appreciable glaze lies on the body: the line of the lip is concave, the pillar is fine, a good deal narrowed, and cut off in front by a long-drawn, twisted, rounded edge. H. 0·88 in. B. 0·33. Penultimate whorl, height 0·17. Mouth, height 0·42, breadth 0·17.

18. *Clathurella phyxanor*,[1] n. sp. (Pl. XXVI. fig. 14).

Station 106. August 25, 1874. Lat. 1° 47′ N., long. 24° 26′ W. Mid-Atlantic. 1850 fathoms. Globigerina ooze. Bottom temperature 36°·6.

Shell.—Thin, tumid, subequally biconical, white, subangulated, cancellated, with longitudinal and spiral threads, subscalar, with a squat, conical, small, yellow-tipped spire, an impressed suture, a tumid body-whorl, a short rounded base, and a triangular, small-pointed, longish, one-sided snout. *Sculpture:* Longitudinals—below the suture the whorls are closely scored with little concave bars, the cusps of the old sinuses; below these bars, above the angle of the shell, there originate oblique threads, which at the angle become nearly perpendicular: on the spire these form little tubercled riblets, of which there are about 25 on the penultimate whorl, but on the body-whorl they become somewhat obsolete; they are parted by broad shallow intervals; besides these there are numerous coarse but feeble lines of growth. Spirals—the upper whorls are angulated below the sinus-area; close to this angulation, both above and below, there are 3 or 4 unequal but rather weak threads; on the side of the whorls are three flat strongish threads, on the body-whorl these all are less distinct, and the whole base and snout are covered with flat, broad threads, and very slight, shallow, squarish furrows; where these threads cross the longitudinals they tend, especially on the upper whorls, to rise into small tubercles.

[1] φυξάνωρ, man-avoiding, so called from the depth and distance of its dwelling.

Colour white. *Spire* rather squat, but conical and small-topped. *Apex:* there seem to have been about 3½ or 4 small, conical, turbinate whorls, but the tip is crushed; they are scored with very short little bars above, which split into reticulations below. *Whorls* 4 besides the apex; they have a sloping shoulder above, are angulately keeled about the middle, below this they are convexly cylindrical, with a very slight amount of contraction into the suture; the body-whorl is tumid, with a short rounded base, produced into a smallish, rather long, subtriangular truncated snout. *Suture* almost horizontal, a little impressed. *Mouth* oval, very slightly angulated above, and drawn out into a short oblique canal in front. *Outer lip* thin, well arched, slightly flattened along the canal; it has a deep, wide, open sinus above, which is barely separated from the suture by a minute ledge; from the sinus the lip-edge sweeps forward with a great wing-like curve, and then bends back to the edge of the canal. *Inner lip:* there is a very thin glaze on the body, and here the line of the lip is quite flat, at the base of the pillar it is bluntly obtuse, after which it runs straight forward; the point of the pillar is barely cut off, but the lip-edge twists out in a long-drawn continuous line. H. 0·5 in. B. 0·28. Penultimate whorl, height 0·08. Mouth, height 0·32, breadth 0·13.

. 19. *Clathurella* (*Daphnella*) *monoceros*, Watson (Pl. XX. fig. 1).

Pleurotoma (*Thesbia*?) *monoceros*, Watson, Prelim. Report, pt. 9, Journ. Linn. Soc. Lond., vol. xv. p. 449.

Station 104. August 23, 1873. Lat. 2° 25′ N., long. 20° 1′ W. South-west of Sierra Leone. 2500 fathoms. Globigerina ooze. Bottom temperature 36°·6.

Shell.—Thin, ivory-white, high, narrow, drawn out, with fine spiral threads, a very oblique impressed suture, rounded whorls, and a contracted base produced into a longish snout. *Sculpture:* Longitudinals—none but fine, somewhat unequal lines of growth. Spirals—with the exception of the sinus-area, the whole surface is covered by fine, rounded, unequal, and irregularly interrupted spiral threads with rather broader intervals. *Colour* porcellanous, ivory-white, glossy. *Spire* remarkably narrow, high, drawn out and conical. *Apex* broken. *Whorls* 5 remaining, but probably 8 to 9 in all, of very regular, but rather rapid increase, high, oblique, slightly tumid; the last rounded, with a conical, protracted, but very lop-sided base running out into a longish straight pillar and triangular snout. *Suture* very oblique and rather deeply impressed. *Mouth* pear-shaped, scarcely pointed above, and protracted into a gradually narrowing canal below. *Outer lip:* a very regular curve in both its planes; the outer edge has a very high and prominent shoulder, whose upper side runs a long way parallel to the body-whorl above it, having a very deep rather than narrow sinus, between which and the body-whorl is no shelf whatever. *Inner lip* is on the narrow body scarcely perceptible as a glaze; on the long direct twisted pillar it is a little thicker, but is very narrow; the end of the pillar is cut off with a very

long-drawn, oblique, slowly narrowing, sharp, twisted edge. H. (of remaining whorls) 1·03 in. B. 0·35. Penultimate whorl, height 0·21. Mouth, height 0·49, breadth 0·18.

This very remarkable form, suggestive of the Narwhal's horn, has unfortunately lost its whole apex. If, therefore, I have put it in this group, it is that the whole style of the shell rather suggests this companionship; and at least I prefer to put it here than anywhere else I can think of. It has in form some features of resemblance to *Pleurotoma aureola*, Reeve, from the Philippines; but, apart from colour, it has a deeper suture and rounder whorls than that. In the shape and style of the shell in a general way it is extremely like *Genea bonellii*, Gené (in Bellardi, Moll. Terr. Terz. Piemonte, vol. i. p. 205, pl. xi. fig. 10, a very poor copy of which will be found in Tryon, vol. iii. p. 227, pl. lxxxv. fig. 582).

20. *Clathurella* (*Daphnella*) *compsa*,[1] Watson (Pl. XIX. fig. 9).

Pleurotoma (*Daphnella*) *compsa*, Watson, Prelim. Report, pt. 10, Journ. Linn. Soc. Lond., vol. xv. p. 470.

Station 174D. August 3, 1874. Lat. 19° 5′ 50″ S., long. 178° 16′ 20″ E. Kandavu, Fiji. 210 fathoms. Coral mud.

Shell.—High, narrow, fusiform, white, with pale irregular ruddy-brown spots near the suture and at the apex, which is small and sharp; the whorls are rounded and reticulately ribbed, the last narrow and drawn out at the base; it has a high subscalar spire; the mouth is long and rather narrow, the outer lip thickened within and without, with a small sinus above and a distinct canal in front. *Sculpture*: Longitudinals—on the earlier whorls there are sharp, narrow, prominent, slightly oblique, remote ribs; these increase in number and diminish in distinctness, till on the last whorl they are very numerous, crowded, and insignificant; this arises from intermediate riblets, which are almost invisible on the earlier whorls, reaching on the last a prominence equal to that of the others; these are best seen in the sinus-area. Behind the lip is a strong and broad varix, scored with the riblets, and bevelled off to a thin prominent edge. Spirals—the whole surface is covered with fine sharp raised spirals, very often alternating with finer ones in the intervals; they are separated by shallow square furrows of about the same breadth as the spirals; at their intersections with the longitudinals they are slightly nodose; in the sinus-area there are only fine crowded spirals, whilst on the snout these are strong and remote. *Colour* dead porcellanous white, with a few faint ruddy-brown blotches near the top of the whorls and toward the outer lip. *Spire* high, conical, scalar. *Apex* small, sharp, conical, consisting of 3 to 4 ruddy rounded embryonic whorls, the sculpture of which is that of the typical *Clathurella* group, *i.e.*, the upper half of the whorls is scored longitudinally by very numerous minute, sharp, raised, curved bars, which split into two and cover the lower half of the whorls with exquisite little square-shaped reticu-

[1] κομψός, neat.

lations formed by the crossing of the bars. *Whorls* 9 to 10 in all, of regular, but rather rapid increase; they are at first rather broad, but the penultimate is high and the last rather long and narrow; they rise in steps one above another, being a little flattened above, are well rounded, and have a slight contraction into the lower suture; the last is produced into a very lop-sided, long, and somewhat oblique and obliquely truncated snout. *Suture* is strongly marked by the slight contraction of the whorl above, and a constriction of the shoulder of the whorl below, but is not really deep, for the inferior whorl laps up on that above it. *Mouth* long, narrow, oblong, sharply pointed above, and produced into an open broadish spout-like canal below. *Outer lip* forms a regular flat curve to the canal, where it is slightly concave and then straight; at its junction with the body there is a strongly marked little rounded nick which cuts into the edge, but is bordered by a small encircling pad lying between it and the body-whorl; this nick is the generic sinus, and the scars of it are marked on all the whorls; the extreme edge of the lip is thin and sharp, but there is a strongish white porcellanous pad a little way within; this pad does not extend to the canal, the edge of which at the point is very obliquely cut off from right to left. *Inner lip:* as mentioned, there is a small pad above formed by an extension of the outer lip; this is continued across the body as a porcellanous layer, thinning out and disappearing on the pillar, which is cut off in front with a long obliquity, whose edge is rounded, but hardly twisted. H. 0·8 in. B. 0·27. Penultimate whorl, height 0·14. Mouth, height 0·42, breadth 0·13.

This is a very beautiful species in form and in sculpture. It may perhaps best be compared with *Pleurotoma hyalina*, Reeve, or with *Mangelia cylindrica*, Reeve, or *Mangelia gracilis*, Reeve, or *Mangelia fragilis*, Reeve, but is not very much like any of them. Its apex distinctly connects it with the *Clathurella* group of which *Daphnella*[1] (*fide auctorum nec* Hinds) is a subdivision; and I have accordingly placed it here, though aware that it is not very like some of the species which have been thus named.

21. *Clathurella* (*Daphnella*) *aulacoëssa*,[2] Watson (Pl. XXIII. fig. 9).

Pleurotoma (*Daphnella*) *aulacoëssa*, Watson, Prelim. Report, pt. 10, Journ. Linn. Soc. Lond., vol. xv. p. 472.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, off the south-west point of Papua. 28 fathoms. Green mud.

Shell.—High, narrow, fusiform, white; the whorls are convexly cylindrical; the spire high, narrow, subscalar, and conical; the body-whorl is long, narrow, and conical, with a broadish snout; the lip has a thin crimped edge; the sinus is small, but very well defined at the extreme top of the long narrow mouth. *Sculpture:* Longitudinals—there are on each

[1] Hinds, who is the author of this genus (see Zool. "Sulphur," p. 25), puts it after *Conopleura* and before *Mangelia*, but gives no further indication of its family relations. Its connection with *Clathurella* is therefore with me more a hope than a conviction.

[2] αὐλαχόις, furrowed.

whorl many (27 on penultimate, about 40 on the last whorl) fine, rounded, curved threads, which correspond with the old lines of growth; they are parted by minute furrows, which are rather narrower than the threads. These longitudinals extend to the base, but not to the snout. Spirals—the riblets are crossed by very similar spiral threads which form minute knots at the crossings, and these are parted by little furrows which are rather wider and less regular than the longitudinal ones, and have occasionally subsidiary threadlets in the middle: there are about 7 of these spirals on the penultimate and about 14 on the last whorl: the sinus-area has very faint threadlets, about three in number, and the first regular spiral below these is stronger than all the rest, and forms a slight keel; they cover the whole snout. *Colour* white. *Spire* high, conical, subscalar. *Apex* small, sharp, consisting of three (probably, for the extreme tip is broken) embryonic whorls which have the typical sculpture, the upper third being straight barred and the lower two-thirds reticulately barred; but the sculpture is very fine. *Whorls* about 8 in all, of regular but rapid increase; in form convexly conical, slightly shouldered above: the last, which is narrow, is produced into a convexly conical base and a broadish oblique-ended snout. *Suture* is slightly impressed, and is somewhat strongly marked by the swelling of the whorl immediately below. *Mouth* narrowly oblong, bluntly pointed above, where it runs out into the small but rather deeply impressed and rounded gutter of the sinus; below, it is produced into a broadish canal. *Outer lip* regularly curved, but at the canal flattened; the edge forms a regularly curved sweep, prominent in the middle, and retreating into the sinus and canal; it is slightly contracted, sharp, crimped rather than toothed, thickened a little way within; in the sinus it is blunted and rounded into a gutter: an extension of the outer lip surrounds the sinus and forms a small pad between that and the body-whorl. *Inner lip:* there is a very thin glaze on the body and pillar: the edge of the pillar in front has a very slight oblique bend, and is sharply rounded, but scarcely twisted. H. 0·31 in. B. 0·12. Penultimate whorl, height 0·07. Mouth, height 0·15, breadth 0·05.

This markedly belongs to the same group as the preceding. It has the same *Clathurella* apex and much the same form as that, and is therefore also comparable with the species referred to on the preceding page; but it is obviously very distinct from them all.

3. *Borsonia*, Bellardi, 1839.

Species.

1. *Borsonia ceroplasta*, Wats. 2. *Borsonia silicea*, Wats.

1. *Borsonia ceroplasta*,[1] Watson (Pl. XVIII. fig. 2).

Pleurotoma (Borsonia) ceroplasta, Watson, Prelim. Report, pt. 10, Journ. Linn. Soc. Lond., vol. xv. p. 473.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

[1] κήρος πλαστός, waxen.

Shell.—High, narrow, biconical, with a tall blunt spire, a slightly impressed suture, and a shortish base: the whorls are feebly ribbed and very obsoletely spiralled. *Sculpture:* there are on the earlier whorls about 12, on the last two whorls about 14 elongated tubercles, which project bluntly and slightly above the middle of the whorls, and are obliquely and feebly produced to the inferior suture; they are obsolete on the base: the surface is closely scratched with fine, somewhat unequal lines of growth. Spirals—there is a very slight pad which forms an inferior margin to the suture; below this is a hardly concave furrow, on the lower side of which the whorls are angulated by the projection of the tubercles: the lower part of the whorls is very obsoletely marked with broad flat spiral threads, which may be traced to the tip of the snout. *Colour* pale waxy white, whence the name. *Spire* conical, with profile-lines interrupted by the prominence of the keel, from which both above and below is a contraction into the suture. *Apex* consists of 2 tumid rounded whorls of nearly equal size, with a very slight suture. *Whorls* 8 in all, of slow and regular increase; the last is small, with a rounded conical base and a smallish snout: they are angularly convex, with a slight contraction into the suture, both at top and bottom of the whorls. *Suture* a little impressed, rather oblique. *Mouth* small and narrow, pear-shaped, scarcely angulated above, and drawn out into a rather narrow canal in front. *Outer lip* regularly curved above, flat in front: the edge retires slightly below the suture, so as to form the deep rather narrow sinus, whose lower side is made by the very high and prominent shoulder, which advances very far forward, and still continues to do so, though more slightly, on to the edge of the canal, where it again retires. *Inner lip:* there is a thin glaze on the body and pillar, whose union is very slightly concave: the generic fold is a prominent, rounded, narrow thread which coils round the pillar about the middle and parallel to the suture: the front of the pillar is narrow, twisted, and oblique. H. 0·5 in. B. 0·2. Penultimate whorl, height 0·08. Mouth, height 0·23, breadth 0·09.

It is interesting to add a new species, and that from the Atlantic, to the few living Pacific species of this Tertiary fossil genus. The whole aspect of the shell is that of a *Pleurotoma* of the *Surcula* group.

2. *Borsonia silicea*, Watson (Pl. XXI. fig. 8).

Pleurotoma (*Borsonia*) *silicea*, Watson, Prelim. Report, pt. 10, Journ. Linn. Soc. Lond., vol. xv. p. 474.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—High, narrow, biconical, with a tall, blunt, scalar spire, and a short contracted base: whorls angulated but hardly prominent above, tubercled but scarcely ribbed, obsoletely spiralled. *Sculpture:* there are in the middle of the whorls small rounded

tubercles, of which there are about 11 on the first ordinary and 16 on the last whorl; on the earlier whorls they are feebly prolonged downwards as riblets, but become weaker on the last whorls. The whole surface is closely scratched with hair-like and somewhat irregular lines of growth. Spirals—an exceedingly slight pad forms a faint inferior margination to the suture: between this and the line of tubercles the profile is oblique and straight, not concave: below the keel formed by the tubercles are a few very faint and sparse spiral threads. *Colour* pale flinty, whence the name. *Spire* conical, with interrupted profile-lines. *Apex* consists of two glossy, tumid, rounded whorls of nearly equal size, and with a very slight suture. *Whorls* 8 in all, of slow and regular increase; they are shouldered above and almost cylindrical below the keel; the last is small, contracts from the keel, and has a short, conical, hardly tumid base prolonged into a short small snout. *Suture* very slightly impressed, rather oblique. *Mouth* small, narrow, pear-shaped, angulated above, and drawn out into a short open canal in front. *Outer lip* steeply curved above, a little flatly prolonged forward; its edge, which retreats at the canal, is prominently rounded in the middle, and forms a high shoulder above, between which and the body is the rather deep, narrow, rounded sinus. *Inner lip:* there is a thinnish glaze on the body and pillar, whose union is very slightly concave; at that point occurs the generic fold, which is somewhat remote within the mouth, and is a rather strong thread; the front of the pillar is rather oblique, sharpish, and twisted. H. 0·41 in. B. 0·15. Penultimate whorl, height 0·06. Mouth, height 0·09, breadth 0·07.

This species differs from the preceding (which it very much resembles) in that the shell is smaller, the whorls more sharply keeled (the carination, too, higher), the contraction of their lower part less marked, the tubercles are rounder and tend less to be drawn out into riblets, the form of the shell is narrower, and the apex is much smaller.

4. *Clionella*, Gray, 1847.

Species.

1. *Clionella quadruplex*, Wats.
2. *Clionella exsculpta*, Wats.
3. *Clionella tholoïdes*, Wats.
4. *Clionella amblia*, Wats.
5. *Clionella aglaophanes*, Wats.
6. *Clionella lophoëssa*, Wats.

1. *Clionella quadruplex*, Watson (Pl. XIX. fig. 7).

Pleurotoma (*Clionella*) *quadruplex*, Watson, Prelim. Report, pt. 11, Journ. Linn. Soc. Lond., vol. xvi. p. 253.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of Azores. 1000 fathoms. Pteropod ooze. Bottom temperature 39°·4.

Shell.—Very high and narrow, conical, scalar, ribbed, bluntly keeled, with a very short conical base. *Sculpture:* Longitudinals—below the suture is a double collar of

small close-set tubercles prolonged downward into folds; below these at the keel are swellings, whence descend flat, rounded, rather feeble ribs, which die out before they reach the lower suture; the surface is closely scored with unequal straight lines of growth. Spirals—there are very many strongish rounded threads parted by fine shallow furrows of equal width; these are crowded on the shoulder. On the middle of the body-whorl a feebler thread appears, like a shadow in the furrows. *Colour:* it is bleached dead white. *Spire* very high and narrow, scalar. *Apex* broken. *Whorls:* only 5 remain; they are high and narrow, droopingly shouldered above, bluntly keeled, cylindrical, but contracting from the keel to the lower suture; the last is narrow, small, and cylindrical, but a very little swollen, with a short very one-sided conical base. *Suture* strong, irregular, a little constricted. *Mouth* narrowly oval, small, bluntly pointed above. *Outer lip* flatly arched. *Inner lip* slightly excavated, concave above, with a straight, shortish, and strong pillar. H. 1·9 in. B. 0·57. Penultimate whorl, height 0·38. Mouth, height 0·8, breadth 0·35.

This is a singularly attenuated form of great beauty, unhappily much broken. The labral sinus exists merely in the form of a very slight retreat of the lip from the suture to the keel. In classing it with *Clionella* I have followed the advice and example of Mr E. A. Smith, while Adams regards that group as freshwater and allied to *Melania*. The specific name is derived from the very remarkable structure of the shell, which consists of 4 layers: the inmost of these is porcellanous and very thin; the next is made up of spiral fibres; the third consists of longitudinal fibres (both of these being comparatively thick), while the outside is membranaceously cretaceous.

2. *Clionella exsculpta*, Watson (Pl. XXIV. fig. 2).

Pleurotoma (*Drillia*) *exsculpta*, Watson, Prelim. Report, pt. 11, Journ. Linn. Soc. Lond., vol. xvi. p. 247.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—High, narrow, conical, scalar, ribbed, with a sub-contracted conical base, a bluntish apex, and having the colour of thin pale flint. *Sculpture:* Longitudinals—on the last whorl there are about 20 (on the first regular whorl about 12) narrow rounded ribs, which originate in the suture; just below this they rise into little rounded tubercles; at the periphery they project in larger and slightly elongated tubercles, below this point they become slightly oblique, are feebler on the base, and disappear on the snout: the lines of growth are fine, but irregular and somewhat indistinct. Spirals—below the suture a slight rounded thread connects the costal tubercles; at the peripheral row of tubercles is a keel; feeble, remote, rounded threads appear on the whole surface, becoming stronger on the base, and still more so on the snout. *Colour* that of pale flint when seen in thin flakes. *Spire* high, narrow, conical, scalar. *Apex* consists of 1½ embryonic whorls, which

form a blunt, smooth, small top, with the extreme tip somewhat immersed; these whorls are very finely, but not quite regularly, microscopically spirally scratched. *Whorls* nearly 9, rather short, with a drooping shoulder and a blunt carination, from which they contract with a scarcely convex profile to the lower suture; the base is conical, very lop-sided, scarcely convex, and prolonged into a very short snout. *Suture* sharp and well defined by the swelling of the whorl above, and by the row of tubercles round the top of the whorl below. *Mouth* oblong, a little oblique, pointed above, prolonged into a shortish oblique canal below. *Outer lip* well arched, with a very slight and open sinus above. *Inner lip*—a very thin glaze runs across the concave line of the body and down the pillar, which is obliquely cut off in front and has a twisted and slightly patulous inner edge. H. 0·65 in. B. 0·21. Penultimate whorl, height 0·11. Mouth, height 0·25, breadth 0·1.

In general form this species is slightly like a large *Pleurotoma cerinum*, Stimp. and Kurtz, but is obviously quite distinct. It is a good deal like *Clionella tholoïdes*, Wats., but is more scalar, is smaller in the apex, longer in the base, and different in sculpture.

3. *Clionella tholoïdes*,[1] Watson (Pl. XXIV. fig. 1).

Pleurotoma (*Drillia*) *tholoïdes*, Watson, Prelim. Report, pt. 11, Journ. Linn. Soc. Lond., vol. xvi. p. 248.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—High, narrow, conical, ribbed, strong, with a rather short conical base, a very blunt dome-shaped apex, and having the texture and colour of flint. *Sculpture:* Longitudinals—there are on each whorl about 17 not very distinct, narrow, slightly swollen ribs, which are a little convex backwards; they run from suture to suture, but die out on the base, and toward the mouth they become a little crowded and indefinite; besides these there are a great many fine, regular, hair-like lines of growth. Spirals—there is on each whorl, above the middle, an angulated carination, bearing a thread on its top, which rises into rounded low tubercles where it crosses the ribs; below this, a little below the middle, is another thread, finer, less prominent, and with feebler tubercles, which also marks a slight keel; three other threads of about the same strength as this last, and at very nearly equal distances, appear on the base: there are faint indications of others besides, as also of microscopic scratches. *Colour* like pale flint in thin flakes; but the apex is white. *Spire* high, narrow, conical. *Apex* consists of 2¼ embryonic whorls, which form a blunt, smooth, round dome, with the extreme tip immersed but not hid. *Whorls* 9 to 10, pretty high, angulated, a little constricted and concave above the keel, and very slightly convex below it; the base is conical, very slightly concave, and prolonged into a short, slightly reverted snout. *Suture* sharp, and slightly canaliculated in con-

[1] θολοειδής, dome-shaped, see the apex.

sequence of the squarish edge of the inferior whorl not quite reaching the first basal thread; between these two the suture lies in a minute square-cut depression. *Mouth* pear-shaped, being oval above, with a short, somewhat oblique canal in front. *Outer lip* well arched, with an extremely slight shallow and open sinus. *Inner lip:* a very narrow glaze spreads across the slightly concave body, and down the pillar, which is short, rather narrow, and somewhat bent to the left in front; and here the inner edge is strong, sharp, a little twisted, and runs out to a sharp point at the end of the pillar. H. 0·66 in. B. 0·23. Penultimate whorl, height 0·12. Mouth, height 0·23, breadth 0·11.

The place of this shell is very doubtful; but there is a very slight upward and backward drawing of the lip below the suture; and this is further prolonged in a slight concavity, which may be reckoned as a sinus.

4. *Clionella amblia*,[1] Watson (Pl. XXII. fig. 12).

Pleurotoma (*Drillia*) *amblia*, Watson, Prelim. Report, pt. 11, Journ. Linn. Soc. Lond., vol. xvi. p. 249.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—High, narrow, conically cylindrical, bluntly angulated, ribbed, porcellanous, with a blunt bulbous apex, a contracted base, an elongated snout, and an impressed suture. *Sculpture:* Longitudinals—the whorls are crossed from suture to suture by slightly curved, hardly oblique ribs, whose convexity is to the right; they do not extend to the base of the last whorl; they are narrow, rounded on the top, feeble above and below, and prominent in the middle; they are parted by unequal furrows broader than themselves; there are 17 on the last whorl, and they decrease up the spire, only 12 being found on the first and second regular whorls; the lines of growth, which agree with the ribs, are fine, smooth, and unequal. Spirals—there are none but fine, regular, very faint microscopic scratches; a few regular equidistant impressed lines, however, cross the snout. *Colour* silicious yellowish-white. *Spire* conically cylindrical, the body-whorl being narrow, and the highest whorls rather broad; the profile-lines are very much interrupted by the prominence of the keels and the contraction of the sutures. *Apex* consists of 1¼ swollen rounded smooth whorls, of which the extreme tip lies over on one side, but, though somewhat compressed, is still a little prominent, and is well defined by the impressed suture. *Whorls* 8½, of very slow increase, rather high, the last small; the projection on the longitudinal ribs forms a sharpish keel above the middle of the whorls; but the whorls themselves are not really carinated; the base contracts rather slowly, and runs out into a longish snout. *Suture* fine, superficial, well marked from the contraction in which it lies. *Mouth* club-shaped, small; but it and the pillar are a good deal broken in the only speci-

[1] ἀμβλύς, blunt.

men. *Outer lip* very regularly convex to the canal-edge, where it becomes concave and then straight; it retreats on leaving the body; but the sinus is excessively shallow, open, and slight. *Inner lip* narrow; it is slightly concave on the body, and then straight on the singularly strong pillar. H. 0·45 in. B. 0·14. Penultimate whorl, height 0·06. Mouth, height 0·17, breadth 0·1.

For both height and breadth I have had here to make allowance, in consequence of the broken condition of the last whorl.

5. *Clionella aglaophanes*,[1] Watson (Pl. XXII. fig. 10).

Pleurotoma (*Drillia*) *aglaophanes*, Watson, Prelim. Report, pt. 11, Journ. Linn. Soc. Lond., vol. xv. p. 250.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—High, narrow, conically cylindrical, with a blunt, flatly rounded apex, a short conical base, and scarcely any snout, hardly angulated, ribbed, contracted in the sinus-area, but barely so at the suture; grey, with a silvery sheen. *Sculpture:* Longitudinals—the whorls are crossed from suture to suture by low, sharpish, subangulately projecting, dextrally convex, hardly oblique ribs, which run continuously, but slightly diminishing in number, up the spire, there being about 15 on the last and 11 on the first regular whorl; on the base they bend strongly to the right, and die out at the point of the snout; they are parted by hollowed furrows which are rather broader than they; both ribs and furrows are scratched with very fine, almost microscopic lines of growth, which coincide with the course of the ribs; in the furrows a few of these lines are slightly stronger than the rest. Spirals—below the sinus-area is a very slight angular projection of the whorls, which is made more marked by a thickening and elevation of the ribs at this point; this is a feature which on the earlier whorls is very distinct, the whole rib being individualised by the central nodule into which it rises; but further on these nodules lose in importance. At the top of each whorl and close to the suture lies a small flattened thread, rising into minute longitudinal nodules at the ribs; below this and above the angulation is a slight furrow where the scars of the old sinuses occur. In all this part the surface of the shell is covered by minute spiral threads which lower down become stronger; they are parted by minute furrows of about the same breadth as the threads; these are all exquisitely fretted by the longitudinal scratches. *Colour* greyish, polished, with a very beautiful silvery sheen on the whole surface. *Spire* conically cylindrical, the body-whorl being small and the apex broad in proportion to the size of the shell; the profile-lines are hardly interrupted by the sutures. *Apex* consists of $1\frac{1}{4}$ broad, depressed, and flatly rounded,

[1] ἀγλαοφανής, bright.

smooth whorls. *Whorls* 8, of very slow increase, short, the last very small, being scarcely at all more tumid than the rest, and having a short conical base; the snout is very short; there is a small constriction round the top of each whorl; and the profile-lines are faintly angulated, but are very slightly convex. *Suture* fine, but well marked, being a little impressed and defined by the slight swelling round the top of the inferior whorl; the superior whorl scarcely contracts towards it. *Mouth* pear-shaped, with a slight angulation at the top and a very short canal below. *Outer lip* evidently thickened, but chipped in the only specimen present; it runs with an almost continuous slightly convex curve from the body to the canal, where the curve is slightly and shortly flattened; the sinus is very shallow and open. *Inner lip* thickened and raised on a small but defined callus; it runs straight across the body to the base of the short, thick pillar, down which it proceeds direct and parallel to the slightly prominent callus-edge on the left; the point of the pillar is rounded and blunt, and hardly advances to the end of the snout, the canal-edge being thick and rounded, cut off obliquely upwards, but not at all reverted. H. 0·3 in. B. 0·1. Penultimate whorl, height 0·03. Mouth, height 0·1, breadth 0·06.

This is an extremely peculiar little shell, remarkable in its narrow cylindrical and compact form, its sculpture, and its slight silvery sheen, from which last feature its name is derived.

6. *Clionella lophoëssa*,[1] Watson (Pl. XXII. fig. 9).

Pleurotoma (*Drillia*) *lophoëssa*, Watson, Prelim. Report, pt. 11, Journ. Linn. Soc. Lond., vol. xvi. p. 252.

Station 120. September 9, 1873. Lat. 8° 37′ S., long. 34° 28′ W. Pernambuco. 675 fathoms. Red mud.

Var. *platia*.[2]

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Pernambuco. 350 fathoms. Red mud.

Shell.—High, narrow, conically cylindrical, with a blunt round apex, a contracted conical base, and shortish snout; it is angulated, and the angulation crested with little conical points; there are feeble ribs and an impressed suture. *Sculpture*: Longitudinals —there are 12 to 13 ribs on each whorl from the second regular whorl onwards; but they are in no way connected from whorl to whorl; they originate below the sinus-area in a little sharpish rounded nodule, crowning an angulation of the whorl at that point; they run forward direct but obliquely to the inferior suture; on the base they die out with a backward curve, and do not reach the snout; in the sinus-area above the nodule they are just traceable in a slight irregularity of the surface and a minute nodule at the suture; the lines of growth are quite independent of the ribs, and are very faint

[1] λοφόεις, crested. [2] πλατύς, broad.

except towards the point of the base. Spirals—at the top of each whorl is a minute projecting band beset by very small conical nodules corresponding to the longitudinal ribs. About one-third down the whorls there is an angulation accentuated by the rib-nodules; halfway between this and the inferior suture a minute sharpish thread appears on the penultimate whorl, while other four, similar and equally parted, appear on the base; all these five threads rise on the ribs into minute sharpish nodules. On the snout there are neither ribs nor spiral threads, only obsolete lines of growth. *Colour* pale greyish-white. *Spire* conically cylindrical, the last whorl being very small and the earlier ones broad; the profile-lines are interrupted by the nodulous angulation and the impressed suture. *Apex* consists of $1\frac{1}{2}$ smooth, globularly rounded whorls, the extreme point of which has the slightest possible prominence. *Whorls* $7\frac{1}{2}$ to 8, of very slow increase, short, the last scarcely more tumid than the rest, with a contracted conical base and a shortish snout; they are angularly convex, with a slight contraction into the suture both at the top and bottom of each whorl. *Suture:* there is a minute angular impression at the line of suture, which is marginated below, and is made yet more distinct by the contraction of the whorls above and below. *Mouth* pear-shaped, small, with a slight angulation above and a rather wide and open canal below. *Outer lip* forms a regular curve, steeper above, and more drawn out below towards the point of the shell; on leaving the body it retreats, at once and very much; after forming a shallow, open, rounded sinus, it advances as a small low-shouldered pinion, retreating along the edge of the canal to the point of the shell. *Inner lip* narrow, slightly sunken, so that the surface of the shell projects a little at the edge of it; its line across the body is straight, being neither convex nor concave. The pillar is narrow, strong, and very short, being obliquely cut off early, with an angularly rounded, slightly twisted edge, and a point truncated backwards. H. 0·3 in. B. 0·11. Penultimate whorl, height 0·05. Mouth, height 0·1, breadth 0·07.

This is another of that curious group which have a tendency to a cylindrical form, a long spire, many short whorls, a broad apex, and a short base.

I have with some hesitation united to this species as a var. *platia* the specimens from Station 122. As the name indicates, they are broader in proportion to height; they are also less cylindrical, the embryonic whorls in particular, the tip being rather smaller and the basal part of the apex broader; the threads on the base of the shell are weaker. On the other hand, the whole form of the whorls and the details of sculpture are identical. In these circumstances it is probably wiser to unite them all in one species, attributing the differences partly to habitat and partly to the specimens of the variety being not fully grown.

Family TEREBRIDÆ, Adams, 1858.

Genus *Terebra*, Adanson, 1757.

Species.

1. *Terebra albomarginata*, Desh.
2. *Terebra bathyraphe*, E. A. Sm.
3. *Terebra conspersa*, Hinds.
4. *Terebra maculata* (Linne).
5. *Terebra muscaria*, Lam.
6. *Terebra polygyrata*, Desh.
7. *Terebra straminea*, Gray.
8. *Terebra triseriata*, Gray.
9. *Terebra* (*Myurella*) *amœna*, Desh.
10. *Terebra* (*Myurella*) *babylonia*, Lam.
11. *Terebra* (*Myurella*) *bicolor*, Angas.
12. *Terebra* (*Myurella*) *cælata*, Adams and Reeve.
13. *Terebra* (*Myurella*) *turrita*, E. A. Sm.
14. *Terebra* (*Myurella*) *undulata*, Gray.
15. *Terebra* (*Myurella*) *mamillata*, n. sp.

1. *Terebra albomarginata*, Deshayes.

Terebra albomarginata, Deshayes, Review of Terebra, Proc. Zool. Soc. Lond., 1859, p. 314, sp. 212.
„ „ Reeve, Conch. Icon., vol. xii. pl. xv. fig. 65.
„ „ Tryon, Manual, vol. vii. p. 29, pl. ix. fig. 24.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Australia (Deshayes, British Museum, &c.)

2. *Terebra bathyraphe*, E. A. Smith (Pl. XIV. fig. 9).

Terebra bathyraphe, E. A. Smith, Ann. and Mag. Nat. Hist., 1875, ser. 4, vol. xv. p. 415.
„ „ E. A. Smith, Ann. and Mag. Nat. Hist., 1877, ser. 4, vol. xix. p. 226.

Station 233. May 17, 1875. Lat. 34° 39′ N., long. 135° 14′ E. Kobi, Japan. 8 fathoms. Mud.

Habitat.—Japan (E. A. Smith).

The figure is drawn from the British Museum specimen, those of the Challenger being in too bad condition for such a purpose.

3. *Terebra conspersa*, Hinds.

Terebra conspersa, Hinds, Proc. Zool. Soc. Lond., 1843, p. 153.
„ „ Hinds in Sowerby's Thes. Conch., vol. i. pt. 5, p. 163, sp. 36, pl. xliv. fig. 74.
„ „ Deshayes, Review of Terebra, Proc. Zool. Soc. Lond., 1859, p. 306, sp. 166.
„ „ Reeve, Conch. Icon., vol. xii. pl. xxiv. fig. 127.
„ „ Tryon, Manual, vol. vii. p. 24, pl. vii. fig. 13.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Samar, Philippines, 8 fathoms, sandy mud (Hinds, &c.)

4. *Terebra maculata* (Linne).

Buccinum maculatum, Linne, Syst. Nat. (ed. 12), p. 1205, No. 479.
Martini, Conch. Cab., vol. iv. p. 284, pl. cliii. fig. 1440.
Terebra maculata, Lamarck, Anim. s. vert., vol. vii. p. 283, and (ed. Desh.) vol. x. p. 238, sp. 1.
Buccinum maculatum, Dillwyn, Cat., vol. ii. p. 642, sp. 132.
" " Wood, Ind. Test., p. 119, pl. xxiv. fig. 129.
" " Quoy and Gaimard, "Uranie," Zool., pl. lxix. fig. 6.
Terebra maculata, Deshayes, Encycl. méthod., vers, vol. iii. p. 1128, sp. 1, pl. ccccii. fig. 1.
" " Kiener, Iconog., p. 4, sp. 1, pl. i. fig. 1.
" " Küster, Conch. Cab. (ed. Küster), p. 11, sp. 10, pl. ii. fig. 7, and pl. iii. fig. 1.
" " Hinds in Sowerby's Thes. Conch., vol. i. pt. 5, p. 150, sp. 1, pl. xlii. fig. 33.
" " Hanley, Ipsa Linn. Conch., pp. 259, 514.
" " Deshayes, Review of Terebra, Proc. Zool. Soc. Lond., 1859, p. 280, sp. 28.
" " Eydoux and Souleyet, "Bonite," p. 612 (Brit. Mus. List, No. 212), pl. xli. figs. 31–37.
" " Reeve, Conch. Icon., vol. xii. pl. i. fig. 4.
" " Issel, Malacol. Mar. Rosso, p. 128, No. 259.
" " Deshayes, Moll. Réunion, p. 132, No. 444.
" " Brazier, "Chevert" Exped. Shells, Journ. Linn. Soc. New South Wales, 1877, vol. i. p. 253, No. 22.
" " v. Martens, Moll. Mauritius, &c., p. 229.
" " Dunker, Index Moll. Japon., p. 70.
" " Tryon, Manual, vol. vii. p. 9, pl. i. figs. 9, 10.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Society, Molucca, Philippine Islands; Port Essington, Australia; throughout the Pacific and Indian Seas (Hinds and Reeve); the Indian Ocean from Africa and the Red Sea to the Malay Archipelago (v. Martens); Torres Strait, low water (Brazier); Japan (? Dunker).

Fossil.—On the shores of the Red Sea (Hinds, but not Issel).

5. *Terebra muscaria*, Lamarck.

Chemnitz, Conch. Cab., vol. iv. pp. 288, 291, pl. cliii. fig. 1441, and pl. cliv. fig. 1443.
Terebra muscaria, Lamarck, Anim. s. vert., vol. vii. p. 285, and (ed. Desh.) vol. x. p. 241, sp. 5.
" " Deshayes, Encycl. méthod., vers, vol. iii. p. 1129, sp. 4, pl. ccccii. fig. 2.
" " Kiener, Iconog., p. 9, sp. 5, pl. iii. fig. 4 (excl. var. 4b).
" " Küster, Conch. Cab. (ed. Küster), p. 4, sp. 1, pl. i. figs. 1, 3, pl. ii. fig. 8, pl. iv. figs. 4, 5.
" " Hinds in Sowerby's Thes. Conch., vol. i. pt. 5, p. 154, sp. 11, pl. xli. figs. 17, 20, pl. xlii. fig. 41.
" " Deshayes, Review of Terebra, Proc. Zool. Soc. Lond., 1859, p. 281, sp. 28.
" " Reeve, Conch. Icon., vol. xii. pl. iii. fig. 9.
" " v. Martens, Moll. Mauritius, &c., p. 229.
" " Tryon, Manual, vol. vii. p. 9, pl. i. fig. 12.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Ticao, Philippines (Reeve); Society and Fiji Islands (Hinds); Indian Ocean, from East Africa by the Seychelles and Mauritius to Ceylon, the Nicobars, and the Malay Archipelago (v. Martens); Japan (Dunker).

6. *Terebra polygyrata*, Deshayes.

Terebra polygyrata, Deshayes, Review of Terebra, Proc. Zool. Soc. Lond., 1859, p. 301, sp. 138.
„ „ Reeve, Conch. Icon., vol. xii. pl. xxvi. fig. 146.
„ „ Tryon, Manual, vol. vii. p. 23, pl. vii. fig. 10.

Station 189. September 11, 1874. Lat. 9° 36′ S., long. 137° 50′ E. West of Cape York, south-west of Papua. 25 fathoms. Green mud.

Habitat.—Philippine Islands (Deshayes, &c.); East Australia (British Museum).

7. *Terebra straminea*, Gray.

Terebra straminea, Gray, Proc. Zool. Soc. Lond., 1834, p. 62.
„ „ Hinds in Sowerby's Thes. Conch., vol. i. pt. 5, p. 169, sp. 56, pl. xlii. figs. 22, 23.
„ *babylonia*, var., Kiener, Iconog., p. 39, pl. xiv. fig. 35a.
„ *straminea*, Deshayes, Review of Terebra, Proc. Zool. Soc. Lond., 1859, p. 311, No. 196, and also p. 315, Nos. 218, 219, as *Terebra circinata* and *Terebra acuta*.
„ „ Reeve, Conch. Icon., vol. xii. pl. xii. fig. 47.
„ „ Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 254, No. 28.
„ „ Tryon, Manual, vol. vii. p. 28, pl. viii. figs. 42–45, 47, 48.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—China (Deshayes), also Philippines, 25 to 30 fathoms (Reeve); also China and Tranquebar (Sowerby); North-east Australia, 0 to 20 fathoms (Brazier).

8. *Terebra triseriata*, Gray.

Terebra triseriata, Gray, Proc. Zool. Soc. Lond., 1834, p. 62.
„ *prælonga*, Deshayes, Review of Terebra, Proc. Zool. Soc. Lond., 1859, p. 315, sp. 221.
„ *triseriata*, Hinds in Sowerby's Thes. Conch., vol. i. pt. 5, p. 171, No. 59, pl. xlv. fig. 119.
„ „ Reeve, Conch. Icon., vol. xii. pl. xiii. fig. 52.
„ „ Tryon, Manual, vol. vii. p. 30, pl. ix. figs. 56, 57.

Station 189. September 11, 1874. Lat. 9° 36′ S., long. 137° 50′ E. West of Cape York, south-west of Papua. 25 fathoms. Green mud.

Habitat.—Port Curtis (Deshayes); Philippines, 6 fathoms (Hinds); China and Philippines (Sowerby).

9. *Terebra* (*Myurella*) *amœna*, Deshayes.

Terebra amœna, Deshayes, Review of Terebra, Proc. Zool. Soc. Lond., 1859, p. 297, sp. 113.
„ „ Reeve, Conch. Icon., vol. xii. pl. xviii. fig. 80.
„ „ Tryon, Manual, vol. vii. p. 19, pl. v. fig. 73.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—China Sea (Deshayes, &c.)

10. *Terebra* (*Myurella*) *babylonia*, Lamarck.

Terebra babylonia, Lamarck, Anim. s. vert., vol. vii. p. 287, and (ed. Desh.) vol. x. p. 243, sp. 9.
„ *striata*, Gray, Proc. Zool. Soc. Lond., 1834, p. 60.
„ *babylonia*, Deshayes, Encycl. méthod., vers, vol. iii. p. 1131, sp. 9, pl. ccccii. fig. 5.
„ „ Küster, Conch. Cab. (ed. Küster), p. 14, pl. v. fig. 2.
„ „ Kiener, Iconog., p. 38, sp. 33, pl. xiv. fig. 35 (excl. var. 35a).
„ „ Hinds in Sowerby's Thes. Conch., vol. i. pt. 5, p. 169, sp. 55, pl. xliii. fig. 67.
„ „ Deshayes, Review of Terebra, Proc. Zool. Soc. Lond., 1859, p. 310, sp. 194.
„ „ Reeve, Conch. Icon., vol. xii. pl. xi. fig. 43.
„ „ v. Martens, Moll. Mauritius, &c., p. 231.
„ „ Tryon, Manual, vol. vii. p. 28, pl. viii. figs. 40, 41.
„ *babylonica*, E. A. Smith, "Alert" Collections, p. 490, No. 13.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Mauritius, Ceylon, Nicobars, Malayan Archipelago, and Polynesia (v. Martens); China and Society Islands (Deshayes); Tahiti (British Museum); Moluccas, the Philippines, and Marquesas Islands (Berne Museum, Collection Shuttleworth).

I have not quoted Küster (*loc. cit. supra*), pl. iii. fig. 2, because, though the figure bears the name of this species, it obviously does not represent Lamarck's shell.

11. *Terebra* (*Myurella*) *bicolor* (Angas).

Acus (*Abretia*) *bicolor*, Angas, Proc. Zool. Soc. Lond., 1867, p. 111, No. 3, pl. xiii. fig. 7, p. 202, No. 95.
Terebra fictilis, var., Tryon, Manual, vol. vii. p. 25, pl. vii. fig. 11.

May 1874. Port Jackson, Sydney. 6 to 7 fathoms.

Habitat.—Port Jackson (Angas).

12. *Terebra* (*Myurella*) *cælata*, Adams and Reeve.

Terebra cælata, Adams and Reeve, "Samarang," p. 30, No. 3, pl. x. fig. 22.
„ „ Reeve, Conch. Icon., vol. xii. pl. xv. fig. 64.
„ „ Deshayes, Review of Terebra, Proc. Zool. Soc. Lond., 1859, p. 304.
„ „ Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 255, No. 32.
„ „ Tryon, Manual, vol. vii. p. 20, pl. v. fig. 77.

Station 203. October 31, 1874. Lat. 11° 6′ N., long. 123° 9′ E. Philippines. 20 fathoms. Mud.

Habitat.—China (British Museum); Philippines (Deshayes); Torres Strait, 20 fathoms (Brazier).

13. *Terebra* (*Myurella*) *turrita*, E. A. Smith (Pl. XIV. fig. 8).

Terebra (*Myurella*) *turrita*, E. A. Smith, Ann. and Mag., 4th ser., 1873, vol. xi. p. 266.

September 8, 1874. Cape York, off Albany Island, Torres Strait. 3 to 12 fathoms.

Habitat.—Torres Strait (E. A. Smith).

The whorls in the Challenger specimen, while of equal height with those of the British Museum specimen, are slightly broader. The figure is drawn from the specimen in the British Museum, which, like that of the Challenger, is from Torres Strait.

14. *Terebra* (*Myurella*) *undulata*, Gray.

Terebra undulata, Gray, Proc. Zool. Soc. Lond., 1834, p. 60.
" " Hinds in Sowerby's Thes. Conch., vol. i. pt. 5, p. 172, sp. 62, pl. xliii. fig. 55.
" " Deshayes, Review of Terebra, Proc. Zool. Soc. Lond., 1859, p. 298, sp. 120.
" " Reeve, Conch. Icon., vol. xii. pl. xviii. fig. 83.
" " Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 255, No. 31.
" " Tryon, Manual, vol. vii. p. 22, pl. vi. figs. 4, 8.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Off Malanipa, Basilan Strait, Philippines. 10 to 20 fathoms. Sand.

Habitat.—New Guinea and Straits of Malacca (Deshayes); Philippines (Reeve); Bow Island, Papua (Hinds); Torres Strait, near low-water mark (Brazier).

15. *Terebra* (*Myurella*) *mamillata*,[1] n. sp. (Pl. XVI. fig. 1).

Station 204 A or B. Nov. 2, 1874. Lat. 12° 43′ S., long. 122° 10′ E. Philippines. 100 to 115 fathoms. Green mud.

Shell.—Not large, but narrow and long, harshly sculptured, and with a remarkably large mamillate apex. *Sculpture:* Longitudinals—there are on each whorl about 20 rather slight curved and oblique ribs, which on the last whorl bend forward on the base and are in this way anteriorly concave; besides these the whole surface is finely puckered. Spirals—each whorl is scored with three bands and three strong furrows; of the bands the

[1] The name is derived from the form of the apex.

highest and broadest lies close to the suture, is flat, and is made up of about four threads parted by minute superficial furrows; the second band lies above the middle of the whorl, is made up of about two threads, parted by a distinct furrow, and is separated from the first band by a strongish depression in which lie two minute threads; the furrow below this second band is deeper and squarer than the first, and has one distinct thread in the bottom of it; the lowest band is more or less distinctly double, and has a distinct sutural constriction below it; on the base are many small rounded threads, of which those round the pillar are feeble. *Colour:* the upper part of each whorl is whitish chestnut, the lower ruddy chestnut; the base and apex are pale. *Spire* long and narrow, bent near the top. *Apex* unusually large and mamillate; the extreme tip is flattened down on one side; the first whorl-and-half is smooth, the next half-whorl longitudinally barred. *Whorls* 17 to 18, rather short, and of regular increase. *Mouth* small (much broken). *Pillar* short, much twisted, and with an anterior double fold. H. 1·35 in. B. 0·25.

There is no species with which this can be very well compared. (*Terebra bathyraphe*, E. A. Sm., has some resemblance, but in all details is different.) The coarse, abrupt, smooth, round apex distinguishes it from all others. *Terebra jeffreysi*, E. A. Sm., and *Terebra torquata*, A. Ad., have both a large blunt apex, but the former has the very tip smaller and the next whorls larger—this besides being in a general way a smaller narrower species of different sculpture; the latter is very like (though not identical) in sculpture, the apex is smaller and the spire finer.

Family Conoidea, Latreille, 1825.

Genus *Conus*, Linne, 1758.

Species.

1. *Conus* (*Puncticulis*) *arenatus*, Hwass.
2. *Conus* (*Puncticulis*) *pulicarius*, Hwass.
3. *Conus* (*Cylindrella*) *sulcatus*, Hwass.
4. *Conus* (*Lithoconus*) *eburneus*, Hwass.
5. *Conus* (*Lithoconus*) *quercinus*, Hwass.
6. *Conus* (*Leptoconus*) *anemone*, Lam.
7. *Conus* (*Leptoconus*) *jukesii*, Reeve.
8. *Conus* (*Leptoconus*) *lizardensis*, Crosse.
9. *Conus* (*Leptoconus*) *nisus*, Chemnitz.
10. *Conus* (*Leptoconus*) *trigonus*, Reeve.
11. *Conus* (*Leptoconus*) *vittatus*, Hwass.
12. *Conus* (*Cylinder*) *textile*, Linne.
13. *Conus* (*Hermes*) *croceus*, E. A. Smith.

1. *Conus* (*Puncticulis*) *arenatus*, Hwass.

Martini, Conch. Cab., vol. ii. p. 341, pl. lxiii. fig. 697.
Conus arenatus, Hwass, Encycl. méthod., vers, vol. i. p. 621, sp. 16, pl. cccxxx. figs. 3, 6, 7.
" " Dillwyn, Cat., vol. i. p. 400, sp. 83.
" " Wood, Ind. Test., p. 81, pl. xv. fig. 79.
" " Lamarck, Anim. s. vert., vol. vii. p. 452, and (ed. Desh.) vol. xi. p. 22, sp. 18.
" " Quoy and Gaimard, "Astrolabe," Zool., vol. iii. p. 96, pl. lii. fig. 9.
" " Kiener, Iconog., p. 38, sp. 36, pl. x. fig. 1.

Conus arenatus, Reeve, Conch. Icon., vol. i. pl. xvii. fig. 92.
„ (*Puncticulis*) *arenatus*, Adams, Genera, vol. i. p. 248.
„ *arenatus*, Sowerby, Thes. Conch., vol. iii. pt. 17, p. 8, sp. 54, pl. lxxxviii. (ii. *Gen.*) figs. 17, 18.
„ „ Deshayes, Moll. Réunion, p. 134, No. 496.
„ „ Issel, Malak. Mar. Rosso, p. 141.
„ „ Küster, Conch. Cab. (ed. Küster), p. 115, sp. 106, and Weinkauff, p. 179, pl. A. figs. 4, 5, pl. xxii. figs. 6, 7.
„ (*Puncticulis*) *arenatus*, v. Martens, Moll. Mauritius, &c., p. 219.
„ „ „ Tryon, Manual, vol. vi. p. 18, pl. iv. fig. 66, pl. xxvii. fig. 2.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—The Red Sea (Issel); the whole Indian Ocean, from the east coast of Africa to the Nicobars, Ceylon and the Malay Archipelago (v. Martens); New Caledonia and the Fiji Islands (Tryon).

2. *Conus* (*Puncticulis*) *pulicarius*, Hwass.

Martini, Conch. Cab., vol. ii. p. 342, pl. lxiii. fig. 698.
Conus pulicarius, Hwass, Encycl. méthod., vers, vol. i. p. 622, sp. 17, and (*Conus fustigatus*) p. 623, sp. 18, pl. cccxx. figs. 1, 2.
„ „ Dillwyn, Cat., vol. i. p. 400, sp. 84.
„ „ Wood, Ind. Test., p. 81, pl. xv. fig. 80.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 453, and (ed. Desh.) vol. xi. p. 23, sp. 19, and (*Conus fustigatus*) p. 24, sp. 20 (see Deshayes' note).
„ „ Quoy and Gaimard, "Astrolabe," Zool., vol. iii. p. 93, pl. lii. fig. 8.
„ „ Reeve, Conch. Icon., vol. i. pl. xviii. fig. 94.
„ „ Kiener, Iconog., p. 39, sp. 31, pl. x. fig. 2, and (*Conus fustigatus*) p. 40, sp. 32, pl. xi. fig. 5.
„ (*Puncticulis*) *pulicarius*, Adams, Genera, vol. i. p. 248.
„ *pulicarius*, Sowerby, Thes. Conch., vol. iii. pt. 17, p. 8, sp. 53, pl. clxxxviii. (ii. *Gen.*) figs. 19–21.
„ „ Crosse and Fischer, Fauna malac. Cochinchine, Journ. de Conch., 1864, vol. xii. p. 334, sp. 38.
„ „ Küster, Conch. Cab. (ed. Küster), p. 101, and Weinkauff, pp. 172, 306, sp. 90, pl. xix. figs. 8, 9, pl. xxxi. fig. 10, pl. lv. figs. 4, 6.
„ „ Lischke, Jap. meer. Conch., vol. iii. p. 21.
„ (*Puncticulis*) *pulicarius*, v. Martens, Moll. Mauritius, &c., p. 219.
„ „ „ Tryon, Manual, vol. vi. p. 19, pl. iv. fig. 68, pl. v. fig. 69.
„ *pulicarius*, Dunker, Index Moll. mar. Japon., p. 92.

July to August 1875. Honolulu, Sandwich Islands. Reefs.

Habitat.—Sandwich Islands, Tonga Islands, &c., Japan (British Museum); the Indian Ocean from Mauritius to Ceylon and the Indian Archipelago (v. Martens).

3. *Conus* (*Cylindrella*) *sulcatus*, Hwass.

Conus sulcatus, Hwass, Encycl. méthod., vers, 1792, vol. i. p. 618, sp. 14, pl. cccxxi. fig. 6.
„ *costatus*, Chemnitz, Conch. Cab., 1795, vol. xi. p. 47, pl. clxxxi. figs. 1745–1747.
„ „ Dillwyn, Cat., vol. i. p. 398, sp. 80.
„ *sulcatus*, Dillwyn, Cat., vol. i. p. 410, sp. 109.
„ „ Wood, Ind. Test., p. 81, pl. xv. fig. 76.
„ *costatus*, Wood, Ind. Test., p. 83, pl. xv. fig. 104.
„ *sulcatus*, Lamarck, Anim. s. vert., vol. vii. p. 451, and (ed. Desh.) vol. xi. p. 20, sp. 15.
„ *asper*, Lamarck, Anim. s. vert., vol. vii. p. 461, and (ed. Desh.) vol. xi. p. 36, sp. 44.
„ *costatus*, Kiener, Iconog., p. 31, sp. 24, pl. vi. fig. 2.
„ *sulcatus*, Reeve, Conch. Icon., vol. i. pl. xviii. fig. 99.
„ „ Sowerby, Thes. Conch., vol. iii. pt. 18, p. 12, sp. 86, pl. clxxxviii. (ii. *Gen.*) fig. 30.
„ „ Küster, Conch. Cab. (ed. Küster), p. 90, sp. 77 (as *Conus asper*, corrected by Weinkauff at p. 167), pl. xvi. figs. 1–3.
„ „ Tryon, Manual, vol. vi. p. 73, pl. xxiii. figs. 79a–81.

January 1875 (?) Cebu, Philippines. Shore.

Habitat.—East Indies (Kiener); China (Hanley in Wood); Indian Ocean (British Museum).

The Challenger shell is higher in the spire and much rounder at the angle than the British Museum specimens, and, like the *Conus costatus* of Chemnitz, has the spiral threads not merely irregularly roughened but tubercled.

4. *Conus* (*Lithoconus*) *eburneus*, Hwass.

Martini, Conch. Cab., vol. ii. p. 316, pl. lxi. fig. 674 (*alone*: not figs. 670–673).
Conus eburneus, Hwass, Encycl. méthod., vers, vol. i. pt. 2, p. 640, No. 39, pl. cccxxiv. figs. 1, 2.
„ „ Dillwyn, Cat., vol. i. p. 358, sp. 9.
„ „ Wood, Ind. Test., p. 77, pl. xiv. fig. 8.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 463, and (ed. Desh.) vol. xi. p. 38, sp. 47.
„ „ Kiener, Iconog., p. 67, pl. xvii. fig. 2.
„ „ Reeve, Conch. Icon., vol. i. pl. xix. fig. 106.
„ „ Sowerby, Thes. Conch., vol. iii. pts. 17, 18, p. 24, sp. 201, pl. cxcviii. (xii. *Gen.*) figs. 247–249.
„ „ Küster, Conch. Cab. (ed. Küster), p. 105, No. 96, and Weinkauff, p. 176, pl. xx. fig. 9.
„ (*Lithoconus*) *eburneus*, v. Martens, Moll. Mauritius, &c., p. 218.
„ „ „ Tryon, Manual, vol. vi. p. 11, pl. ii. figs. 24, 25.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Off Malanipa, Basilan Straits, Philippines. 10 to 20 fathoms. Sand.

Habitat.—Indian Ocean to Malayan Archipelago (v. Martens); South Pacific, Australia, Fiji, Tahiti, Erromanga, Duchateau, Andamans, Ceylon (British Museum); New Caledonia (Crosse).

5. *Conus (Lithoconus) quercinus*, Hwass.

Martini, Conch. Cab., vol. ii. p. 299, pl. lix. fig. 657.
Conus quercinus, Hwass, Encycl. méthod., vers, vol. i. p. 681, sp. 71, pl. cccxxxii. fig. 6.
„ *cingulum*, Martyn, Univ. Conch., vol. i. fig. 39, and (ed. Chenu), p. 22, pl. xii. fig. 1.
„ *quercinus*, Dillwyn, Cat., vol. i. p. 393, sp. 72.
„ „ Wood, Ind. Test., p. 81, pl. xv. fig. 68.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 485, and (ed. Desh.) vol. xi. p. 69, sp. 90.
„ *ponderosus*, Sowerby, Conch. Illustr., pl. xi. fig. 239.
„ *quercinus*, Kiener, Iconog., p. 93, sp. 76, pl. xxxii. fig. 1, pl. xxxiii. fig. 2.
„ „ Reeve, Conch. Icon., vol. i. pl. xxvi. fig. 148.
„ „ Sowerby, Thes. Conch., vol. iii. pts. 17, 18, p. 24, sp. 200, pl. cxcvii. (xi. *Gen.*) figs. 239, 240.
„ (*Lithoconus*) *quercinus*, Adams, Genera, vol. i. p. 250.
„ *quercinus*, Issel, Malac. Mar Rosso, p. 143.
„ „ Küster, Conch. Cab. (ed. Küster), p. 82, sp. 66, and Weinkauff, pp. 163, 305, pl. xiii. fig. 5, pl. lv. figs. 1, 3.
„ (*Dendroconus*) *quercinus*, Tryon, Manual, vol. vi. p. 17, pl. iv. fig. 59.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Off Malanipa, Basilan Strait, Philippines. 10 to 20 fathoms. Sand.

Habitat.—Red Sea (Issel); Persian Gulf, Seychelles, Ceylon, Swan river North Australia, New Zealand, Sandwich Islands (British Museum); New Caledonia and Friendly Islands (Weinkauff).

6. *Conus (Leptoconus) anemone*, Lamarck.

Conus anemone, Lamarck, Ann. d. Mus., vol. xv. p. 272.
„ „ Dillwyn, vol. i. p. 385, sp. 57.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 479, and (ed. Desh.) vol. xi. p. 61, No. 78.
„ *ardisiacus*, Kiener, Iconog., p. 235, pl. xlvi. fig. 3.
„ *maculatus*, Sowerby, Conch. Illustr., fig. 3.
„ *anemone*, Reeve, Conch. Icon., vol. i. pl. xxv. fig. 139 (not 139b).
„ „ Sowerby, Thes. Conch., vol. iii. pts. 17, 18, p. 31, sp. 263, pl. ccii. (xv. *Gen.*), figs. 339–341.
„ „ Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 169, No. 85.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 244, No. 198, pl. xli. figs. 1–5.
„ „ Tryon, Manual, vol. vi. p. 69, pl. xxii. figs. 55–61.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37″ E. Off East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

Habitat.—South Australia (Angas); Swan river North Australia (British Museum).

7. *Conus (Leptoconus) jukesii*, Reeve.

Conus jukesii, Reeve, Conch. Icon., suppl. pl. ii. fig. 278.
„ „ Sowerby, Thes. Conch., vol. iii. pts. 17, 18, p. 31, sp. 265, pl. cxcix. (xiii. *Gen.*) fig. 297.
Leptoconus jukesii, Adams, Genera, vol. i. p. 253.

Conus jukesii, Angas, Proc. Zool. Soc. Lond., 1867, p. 204, No. 114.
„ „ Brazier, Proc. Zool. Soc. Lond., 1869, p. 562.
„ *anemone*, var., Tryon, Manual, vol. vi. p. 69, pl. xxii. fig. 58.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
May 1874. Port Jackson, Sydney. 6 to 7 fathoms.

Habitat.—Port Jackson and North Australia (Angas).

Weinkauff in Conch. Cab. (ed. Küster), p. 245, considers this species as = *Conus anemone*, Lam., in which I think he is mistaken. Without dwelling on the squatness of form and lowness of spire in *Conus jukesii*, Reeve, and admitting how similar is the sculpture of the earlier whorls, it will be observed that the spirals of the spire in *Conus anemone* become coarse, while in *Conus jukesii* they continue as fine and delicate as at first. The embryonic apex, too, of *Conus anemone* is rather larger and more exserted than in Reeve's species.

8. *Conus* (*Leptoconus*) *lizardensis*, Crosse.

Conus lizardensis, Crosse, Journ. de conch., 1865, p. 305, pl. ix. fig. 5.
„ „ Sowerby, Thes. Conch., vol. iii. pts. 17, 18, Suppl., p. 331, pl. cclxxxviii. (xxvii. *Gen.*) fig. 642.
„ *anemone*, Tryon, Manual, vol. vi. p. 70, pl. xxii. fig. 58.

Station 189. September 11, 1874. Lat. 9° 36′ S., long. 137° 50′ E. West of Cape York, south-west of Papua. 25 fathoms. Green mud.

Station 190. September 12, 1874. Lat. 8° 56′ S., long. 136° 5′ E. Arafura Sea. 49 fathoms. Green mud. Surface temperature 79°·2.

Habitat.—Lizard Island, north-east of Australia (Crosse).

Weinkauff (Conch. Cab., ed. Küster, p. 376) considers this as the young of *Conus borneensis*, Adams and Reeve.

9. *Conus* (*Leptoconus*) *nisus*, Chemnitz.

Conus nisus, Chemnitz, Conch. Cab., vol. xi. p. 64, pl. clxxxiii. figs. 1784, 1785.
„ „ Dillwyn, vol. i. p. 388, sp. 61.
„ *stramineus*, Lamarck, Ann. d. Mus., vol. xv. p. 273.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 481, and (ed. Desh.) vol. xi. p. 64, sp. 81.
„ *alveolus*, Sowerby, Conch. Illustr., No. 11.
„ *stramineus*, Reeve, Conch. Icon., vol. i. pl. xlii. fig. 225.
„ „ Kiener, Iconog., p. 234, pl. xlvi. fig. 2.
„ *nisus*, Sowerby, Thes. Conch., vol. iii. p. 33, sp. 290, pl. ccv. (xix. *Gen.*) figs. 470, 471.
„ „ Weinkauff, Conch. Cab. (ed. Küster), pp. 123, 181, pl. xxiii. figs. 9, 10.
„ „ Tryon, Manual, vol. vi. p. 59, pl. xviii. figs. 63–68.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Off Malanipa, Basilan Strait, Philippines. 10 to 20 fathoms. Sand.

Habitat.—Moluccas and the Philippines (British Museum).

10. *Conus* (*Leptoconus*) *trigonus* (?), Reeve.

Conus trigonus, Reeve, Conch. Icon., vol. i. Suppl. pl. iii. fig. 286.
„ „ Sowerby, Thes. Conch., vol. iii. pts. 17, 18, p. 28, sp. 230, pl. ix. fig. 205.
Leptoconus trigonus, Adams, Genera, vol. i. p. 252.
Conus trigonus, Weinkauff, Conch. Cab. (ed. Küster), p. 336, sp. 300, pl. lxii. fig. 4.
„ „ Tryon, Manual, vol. vi. p. 42, pl. xii. fig. 35.

Station 190. September 12, 1874. Lat. 8° 56′ S., long. 136° 5′ E. Arafura Sea. 49 fathoms. Green mud.

Habitat.—Philippines (Sowerby).

I believe the Challenger specimen may be reckoned to this species, but I put it here with much doubt. It is young and not in very good condition, being discoloured, though unworn. Compared with the British Museum types it is flatter in the spire and much more sharply angulated than any even of the young specimens—the whorls of the spire are much more closely and regularly spiralled; below the angle there are seven distinct stippled spiral furrows, which do not exist in those others; a little lower on the whorl occur two more, while toward the point of the shell the spiral furrows are both fewer and less equally arranged.

11. *Conus* (*Leptoconus*) *vittatus* (?), Hwass.

Conus vittatus, Hwass, Encycl. méthod., vers, vol. i. p. 704, sp. 95, pl. cccv. fig. 3.
„ „ Dillwyn, Cat., vol. i. p. 390, No. 67.
„ „ Wood, Ind. Test., p. 80, pl. xv. fig. 63.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 470, and (ed. Desh.) vol. xi. p. 49, sp. 63.
„ „ Reeve, Conch. Icon., vol. i. pl. xiv. fig. 75.
„ „ Kiener, Iconog., p. 110, sp. 91, pl. lxiii. fig. 5.
„ „ Sowerby, Thes. Conch., vol. iii. pts. 17, 18, pl. cciii. (xvii. *Gen.*) fig. 410.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 226, No. 177, pl. xxxvii. figs. 5, 6.
„ „ Tryon, Manual, vol. vi. p. 43, pl. xiii. figs. 41–44.

July 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Philippines (British Museum).

The identification of this specimen is unsatisfactory, the shell being very young, and my notes seem to indicate that there is some confusion either among the specimens or in the nomenclature of the British Museum. Had there existed besides the difficulty of habitat resulting from the locality to which the species is ordinarily attributed, I should have felt it necessary to abandon the attempt to identify the Challenger shell altogether; but the Philippines, from which various British Museum specimens are derived, have a good many species in common with the Fiji Islands.

12. *Conus* (*Cylinder*) *textile*, Linne.

Le Loman, Adanson, Sénégal, p. 96, pl. vi. fig. 7.
Conus textile, Linne, Syst. Nat. (ed. 12), p. 1171, No. 319.
Martini, Conch. Cab., vol. ii. p. 243, pl. liv. figs. 598–600, vol. x. p. 77, pl. cxliii. fig. 1326.
Conus textile, Bruguière, Encycl. méthod., vers, vol. i. p. 751, sp. 145, pl. cccxliv. fig. 5.
„ „ Dillwyn, Cat., vol. i. p. 425, sp. 141.
„ „ Wood, Ind. Test., p. 85, pl. xvi. fig. 136.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 523, and (ed. Desh.) vol. xi. p. 123, sp. 178.
„ „ Quoy and Gaimard, "Astrolabe," Zool., vol. iii. p. 100, pl. liii. figs. 15–17.
„ „ Kiener, Iconog., p. 328, sp. 293, pl. xc. fig. i. pl. cii, fig. 4.
„ „ Reeve, Conch. Icon., vol. i. pl. xxxviii. fig. 209.
„ „ Hanley, Ipsa Linn. Conch., pp. 178, 495.
Cylinder textile, Adams, Genera, vol. i. p. 255.
Conus textile, Crosse and Fischer, Journ. de conch., 1864, vol. xii. p. 335.
„ „ Sowerby, Thes. Conch., vol. iii. pts. 17, 18, p. 41, sp. 354, pl. ccix. (xxiii. *Gen.*) fig. 567.
„ „ Lischke, Japan. Meer. Conch., vol. i. p. 31, vol. ii. p. 25.
„ „ Küster, Conch. Cab. (ed. Küster), p. 51, and (Weinkauff), p. 154, sp. 38, pl. vii. fig. 10, pl. viii. figs. 4–6.
„ (*Textilia*) *textile*, v. Martens, Moll. Mauritius, &c., p. 224.
„ *textile*, Tryon, Manual, vol. vi. p. 89, pl. xxix. figs. 92–99, pl. xxx. figs. 100–107.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—The Indian Ocean from Eastern Africa to Ceylon, the Nicobars, and Australia (v. Martens); New Guinea (Quoy and Gaimard); Cochin-China (Crosse and Fischer); Manilla and Japan (Lischke); Society Islands (Reeve).

Adanson ascribes this species to Senegal, but that is of course a mistake.

13. *Conus* (*Hermes*) *croceus* (?), E. A. Smith.

Conus croceus, E. A. Smith, Ann. and Mag. Nat. Hist., ser. 4, March 1877, vol. xix. p. 223.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, off south-west point of Papua. 28 fathoms. Green mud.

Habitat.—(?)

I have not much satisfaction in this identification. The Challenger specimens are larger, the whorls are more exserted, and the spirals are much more numerous and less sharp than in the type; but after many hesitations I could not in the end persuade myself to separate them.

Family TRITONIDÆ, Broderip, 1839.

Genera. 1. *Triton*. 2. *Ranella*. 3. *Nassaria*.

1. Genus *Triton*, Montfort, 1810.

Species.

1. *Triton nodifer*, Lam.
2. *Triton subdistortus*, Lam.
3. *Triton* (*Simpulum*) *costatus*, Born.
4. *Triton* (*Simpulum*) *philomelæ*, Wats.
5. *Triton* (*Cabestana*) *Spengleri*, Chem.
6. *Triton* (*Cymatium*) *tuberosus*, Lam.
7. *Triton* (*Gutturnium*) *elongatus*, Reeve.
8. *Triton* (*Gutturnium*) *gracilis*, Reeve.
9. *Triton* (*Lagena*) *magellanicus*, Chem.
10. *Triton* (*Priene*) n. sp.
11. *Triton* (*Distorsio*) *cancellinus*, de Roissy.

1. *Triton nodifer*, Lamarck.

Chemnitz, Conch. Cab., vol. iv. p. 118, pl. cxxxvi. figs. 1284, 1285.
Murex gyrinoïdes, Brocchi, Conch. subapp. foss., vol. ii. p. 401, pl. ix. fig. 9 (a young shell), 2d ed., vol. ii. p. 190.
„ *tritonis* (not of Linne), Brocchi, Conch. subapp. foss., vol. ii. p. 413, 2d ed., vol. ii. p. 204.
Triton nodiferum, Lamarck, Anim. s. vert., vol. vii. p. 179, and (ed. Desh.) vol. ix. p. 624, sp. 2.
Tritonium nodiferum, Philippi, Enum. Moll. Sicil., vol. i. p. 212, vol. ii. p. 184, sp. 2.
Murex tritonis, Delle Chiaje in Poli Testacea, vol. iii. p. 48, pl. xlix. fig. 9.
Triton nodiferum, Deshayes, Encycl. méthod., vers, vol. iii. p. 1055, sp. 2.
„ „ Kiener, Iconog., p. 29, sp. 23, pl. i.
„ *sauliæ*, Krauss, Südafrik. Moll., p. 114, sp. 1.
„ *nodiferum*, d'Orbigny, Moll. Canaries, p. 94, No. 148.
„ „ Reeve, Conch. Icon., vol. ii. pl. iii. fig. 9, and as *Triton sauliæ*, pl. v. fig. 17.
„ „ Hörnæs, Foss. Moll. Wiener Bassin., p. 201, sp. 1, pl. xix. figs. 1, 2.
Tritonium nodiferum, Weinkauff, Mittelmeer. Conch., vol. ii. p. 75, sp. 1.
Triton nodiferus, Gwyn Jeffreys, Brit. Conch., vol. iv. p. 301, sp. 1, vol. v. p. 218, pl. lxxxiii. fig. 3.
„ *nodiferum*, Bellardi, Moll. terr. terz. Piemonte, &c., vol. i. p. 207.
„ „ Hidalgo, Cat. Moll. Mar. de l'Espagne, p. 86, sp. 2.
„ „ Hidalgo, Moluscos mar. de España, pl. xviii. fig. 1.
„ *sauliæ*, Lischke, Japan. Meer. Conch., vol. i. p. 45.
„ *nodiferus*, Kobelt, Jahrb. Malak. Gesellsch., 1878, p. 243, sp. 3 (also var. *Triton sauliæ*).
„ „ Kobelt, Conch. Cab. (ed. Küster), p. 177, sp. 17, pl. li. (for *Triton sauliæ*, see p. 171, sp. 13, pl. xlv. figs. 1, 2).
„ „ Tryon, Manual, vol. iii. p. 10, pl. i. figs. 2, 3, pl. iii. fig. 17, pl. iv. fig. 23.
Tritonium nodiferum, Dunker, Index Moll. Mar. Japon., p. 27.

July 28–31, 1873. St Vincent, Cape Verdes. Harbour.

Habitat.—Great Britain and the Mediterranean, the Cape of Good Hope, and Indian Ocean to Japan (Kobelt).

Fossil.—From the Miocene onwards (Hörnæs).

2. *Triton subdistortus*, Lamarck.

Triton subdistortum, Lamarck, Anim. s. vert., vol. vii. p. 186, and (ed. Desh.) vol. ix. p. 638, No. 23.
„ „ Kiener, p. 37, No. 29, pl. xvi. fig. 2.
„ „ Reeve, Conch. Icon., vol. ii. pl. i. fig. 2 a and b.
„ *subdistortus*, Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 161, No. 28.
„ „ Kobelt, Jahrb. deutsch. malak. Gesellsch., 1878, p. 244, sp. 5.
„ „ Kobelt, Conch. Cab. (ed. Küster), pp. 216, 267, pl. lxx. figs. 5, 6 (not pl. lxi. figs. 1, 2).
„ „ Tryon, Manual, vol. iii. p. 11, pl. iii. fig. 18.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait, South Australia. 38 fathoms. Sand and shells.

Habitat.—Port Adelaide, King George's Sound, and Sydney, Australia; Tasmania (British Museum); South Australia (Kobelt).

3. *Triton* (*Simpulum*) *costatus* (Born).

Le Vojet, Adanson, Sénégal, p. 118, pl. viii. fig. 2.
Chemnitz, Conch. Cab., vol. iv. p. 96, pl. cxxxi. figs. 1252, 1253.
Murex costatus, Born, Test. Mus. Cæs. Vindobon, 1780, p. 297.
„ *argus fasciatus*, Chemnitz, Conch. Cab., vol. x. p. 240, pl. clx. fig. 1522.
„ *parthenopus*, Von Salis, Reisen und Natürlichen in Sicilien, 1790, p. 370, pl. vii. fig. 1.
„ *pileare* (not of Linne), Chemnitz, Conch. Cab., vol. xi. p. 115, pl. cxci. figs. 1837, 1838.
„ „ (not of Linne), Brocchi, Conch. foss. Subappen., vol. ii. p. 398 and (ed. 2) vol. ii. p. 183, sp. 12.
„ *parthenopus*, Dillwyn, Cat., vol. ii. p. 696, sp. 29.
„ *parthenopæus*, Wood, Ind. Test., p. 127, pl. xxv. fig. 30.
Triton succinctum, Lamarck, Anim. s. vert., vol. vii. p. 181, and (ed. Desh.) vol. ix. p. 628, sp. 8 (see Deshayes' note).
„ *succinctum*, Deshayes, Encycl. méthod., vers, vol. iii. p. 1057, sp. 7, pl. ccccxvi. fig. 2.
„ *pileare* (not of Linne), d'Orbigny, Moll. Canaries, p. 94, No. 149.
„ *succinctum*, Kiener, Iconog., p. 33, sp. 26, pl. vi. fig. 1.
„ *pileare* (not of Linne), d'Orbigny, Amérique méridionale, vol. v. p. 449, No. 388.
„ *olearium* (not of Linne), Küster, Conch. Cab. (ed. Küster), p. 162, pl. xliii. figs. 1, 2, 5, 7, pl. xlv. figs. 1, 2.
„ *americanum*, d'Orbigny, Moll. Cuba, vol. ii. p. 163, No. 335, pl. xxiii. fig. 22.
„ *succinctum*, Reeve, Conch. Icon., vol. ii. pl. x. fig. 32.
„ „ Philippi, Enum. Moll. Sicil., vol. ii. p. 184, sp. 6.
„ *olearium* (not of Linne), Krauss, Südafrik. Moll., p. 114, sp. 3.
„ *brazilianum*, Gould, Boston Proc., vol. iii. p. 142, Moll. Wilkes' Exped., Appendix, p. 504 (?) pl. xvii. fig. 296.
Tritonium adansonii, Dunker, Index Moll. Guinea, pp. 26, 65.
„ *costatum*, Fischer, Coq. Guadaloupe, Revue Coloniale, Dec. 1857, p. 8, No. 9.
„ *succinctum*, Reibisch, Moll. Capverdischen Inseln, Malak. Blätter, 1865, vol. xii. p. 127, No. 38.
„ *parthenopus*, Weinkauff, Mittelmeer. Conch., vol. ii. p. 77.
Triton succinctum, Hidalgo, Moll. de l'Espagne, p. 86, sp. 3.
„ „ Hidalgo, Moluscos mar. de España, &c., pl. xvii. fig. 1.
„ (*Simpulum*) *olearium* (not of Linne), Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 188, No. 14.

Triton (*Simpulum*) *acclivis*, Hutton, Cat. New Zealand Mar. Moll., p. 13, No. 33, plate, fig. 8.
„ *olearium* (not of Linne), Hutton, Manual, p. 64.
„ „ (not of Linne), Lischke, Japan. Meer. Conch., vol. i. p. 48.
„ „ (not of Linne), Bellardi, Moll. terr. terz. Piemonte, vol. 1, p. 210.
„ *parthenopus*, Kobelt, Jahrb. Malak. Gesellsch., 1878, p. 244, sp. 7.
„ *olearius* (not of Linne), Seguenza, Form. terz. Calabria, p. 108, and (*Triton parthenopus*) pp. 319, 353.
„ (*Simpulum*) *olearium* (not of Linne), Tryon, Manual, vol. iii. p. 11, pl. iii. fig. 19, pl. iv. fig. 24, pl. v. figs. 27–29, pl. vi. fig. 37.
Tritonium parthenopes, Dunker, Index Moll. Japon., p. 28.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—From the Mediterranean and the West Indies by Africa and Brazil to the Cape of Good Hope, Australia and New Zealand, Japan and Tahiti (see Lischke).

Fossil.—From the Upper Miocene beds of Calabria onwards (Seguenza).

I have examined a large series of the forms which, under one name or other, in various museums, are attributed to this species. The examination was entered upon with a strong impression that shells from localities so various as the labels indicated ought to be separated, but I utterly failed in the attempt to part them. For a shallow-water species the width of distribution is certainly very remarkable, and that the more so as the species is absent from the Indian Ocean.

In regard to the name every one has felt the difficulty that exists. Mr Hanley's positive assurance (see Ipsa Linnei Conchylia, *Murex olearium*, p. 287) that the *Murex olearium*, Linne, is *Ranella gigantea*, Lam., makes it impossible to attach this name to the species we are examining. I confess to parting with Von Salis' name of *parthenopus* with great reluctance, but Born's name, as Mr Hanley has already pointed out (Wood, Ind. Test., p. 127, sub voce *parthenopus*), has unquestionable priority.

4. *Triton* (*Simpulum*) *philomelæ*, Watson (Pl. XIV. fig. 10).

Triton philomelæ, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 268.

Station 135c. October 17, 1873. Lat. 37° 25′ 30″ S., long. 12° 28′ 30″ W. Nightingale Island, Tristan da Cunha. 100 to 150 fathoms.

Shell.—A rather high narrow cone, with a contracted base and long reverted canal, two varices on the last whorl, and a thin bristly epidermis. *Sculpture:* Longitudinals—there are about 18 straightish ribs on the last whorl, these are fewer in number on the earlier whorls; they are rounded, a little prominent, and about half the width of the shallow depressions which part them; relatively to these the varices (of which there is one on each two-thirds of a whorl) are high and prominent, though narrow; the whole surface, ribs and interstices, is rather coarsely striated with fineish rounded threads on the lines of growth. Spirals—the last whorl is encircled by 6 or 7 rounded spiral threads, which on the longitudinals form blunt rounded tubercles, pretty equally parted above; they are

slightly more crowded on the base; the second, third, and fourth feebly carinate the body-whorl; between them lie 3 or 4 slighter rounded threads, which do not form tubercles on the ribs; below these on the base are 6 other spirals, with a similar feebler spiral between them, while on the snout there are about 9 pretty equal, close-set, rounded threads which run parallel with the open slit of the canal. *Colour* porcellanous white, with chestnut on the larger spiral threads. *Epidermis* of a pale ruddy brown, thin, rising along all the spirals into distinct short, sharp bristles, which are set on small round tubercles. *Spire* high and rather narrow, scalar, conical, but with its profile lines broken by the contracted suture. *Apex* consists of four polished, but spirally threaded, white, turbinated whorls, of which the first is extremely small and somewhat immersed. *Whorls*, 8 to 9 in all; they have a sloping flat shoulder to the second spiral, below which they are cylindrical and scarcely convex; the last whorl is more tumid and rounded than the others, but is very much and rapidly contracted to the rather small, longish, sharply conical, lop-sided, and reverted snout, which, viewed from above, projects to the left from the right side of the base. *Suture* interrupted by the ribs and scarcely at all impressed, but strongly defined by the long sloping shoulder below it; on the embryonic whorls it is slightly channelled. *Mouth* almost round, but a little angulated and slightly distorted; a long, straight, and very narrow slit of a canal runs out of it toward the left, neither narrowing nor widening from the place where it leaves the mouth; its sinistral inclination seems to give the whole snout a turn to the left. *Outer lip:* its semicircular curve is a little flattened; at the point of the mouth it turns quickly and runs quite straight to the point of the snout, where it is a little obliquely cut off; the edge is sharpish, but with a tendency round the mouth to become double, in the form of an outside and an inside lamella parted by a minute shallow furrow; it is thickened outside by the slightly remote, narrowish, rounded, almost scrobiculated[1] varix, which on the snout loses definiteness and becomes doubtful; within it is thickened by a strong porcellanous milky-white varix, on which project 6 to 8 tubercle-like teeth, which are slightly elongated from within outwards; this labral varix is entirely absent at the upper angle of the mouth. *Inner lip:* its curve cuts somewhat deeply into the body-whorl, which it crosses as a thinnish, expanded, defined glaze; down the pillar it is reverted, with a slightly detached and projecting edge; towards the point of the mouth it is suddenly inverted so as to narrow and cover the canal, leaving behind it on the left a small, shallow, angulated furrow, whose labial side is scored with minute, blunt, interrupted lamellæ: there are 4 tubercle-like teeth on the pillar, of which the highest is often a little remote from the rest, the lowest, close to the origin of the canal, is smallest: the lip is plaited variously by the underlying spirals; near the upper corner is a single, rather obsolete tooth, which, like the rest, is a little elongated from within outwards. H. 1·15 in. B. 0·6. Penultimate whorl, height 0·26. Mouth, height 0·39, breadth 0·33. Canal, length 0·23, breadth 0·03.

[1] I use this word to recall the similar, though stronger, feature in *Ranella scrobiculator*, Linne.

This is a very exceptional form, and there is nothing much resembling it for comparison. It is narrower in the spire, less strongly ribbed longitudinally, with a shallower suture and much longer snout than *Triton quoyi*, Reeve = *Triton viperinum*, Kiener *nec* Lam., which in some features it recalls.

5. *Triton* (*Cabestana*) *spengleri* (Chemnitz).

Murex cutaceus (not of Linne), Chemnitz, Conch. Cab., vol. x. p. 266, pl. clxiii. figs. 1559, 1560.
„ *spengleri*, Chemnitz, Conch. Cab., vol. xi. p. 117, pl. cxci. figs. 1839, 1840.
„ „ Dillwyn, Cat., vol. ii. p. 700, sp. 37.
„ „ Wood, Ind. Test., p. 128, pl. xxvi. fig. 38.
Triton spengleri, Lamarck, Anim. s. vert., vol. vii. p. 181, and (ed. Desh.) vol. ix. p. 627, sp. 6.
„ „ Deshayes, Encycl. méthod., vers, vol. iii. p. 1056, sp. 5.
„ „ Quoy and Gaimard, "Astrolabe," Zool., vol. ii. p. 538, pl. xl. figs. 1, 2.
„ „ Kiener, Iconog., p. 32, sp. 25, pl. iv. fig. 1.
„ „ Reeve, Conch. Icon., vol. ii. pl. xi. fig. 36.
„ „ Küster, Conch. Cab. (ed. Küster), p. 166, pl. xliv. figs. 5, 6, pl. xlv. figs. 5, 6.
Tritonium (*Cabestana*) *spengleri*, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 188, No. 15.
Triton spengleri, Kobelt, Jahrb. deutsch. malak. Gesellsch., 1878, p. 249, sp. 29.
„ „ Hutton, Cat. Mar. Moll. New Zealand, p. 13, No. 32.
(?) *Tritonium spengleri*, v. Martens, Crit. List Moll. New Zealand, p. 24.
„ „ Hutton, Manual, p. 64.
Triton (*Simpulum*) *spengleri*, Tryon, Manual, vol. iii. p. 16, pl. ix. fig. 61.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Australia (Angas) and New Zealand (Hutton).

The Challenger specimen is a young and very strangely contracted shell, but it has the long narrow pillar and thin lip which distinguish this species from *Triton waterhousei*, Ad. and Ang., found at Port Lincoln.

6. *Triton* (*Cymatium*) *tuberosus*, Lamarck.

Martini, Conch. Cab., vol. iii. p. 362, pl. cxii. figs. 1050, 1051.
Triton tuberosum, Lamarck, Anim. s. vert., vol. vii. p. 185, and (ed. Desh.) vol. ix. p. 635, sp. 18.
„ „ Deshayes, Encycl. méthod., vers, vol. iii. p. 1060, sp. 13.
„ „ Quoy and Gaimard, "Astrolabe," Zool., vol. ii. p. 542, pl. xl. fig. 18.
„ „ Kiener, Iconog., p. 12, sp. 9, pl. xiv. fig. 2.
„ „ Reeve, Conch. Icon., vol. ii. pl. i. fig. 1.
„ „ Eydoux and Souleyet, "Bonite," Zool., vol. ii. p. 623, pl. xliv. figs. 27, 28.
„ *antillarum*, d'Orbigny, Moll. Cuba, vol. ii. p. 161, pl. xxiii. fig. 20.
„ *tuberosum*, Deshayes, Moll. Réunion, p. 113, No. 358.
„ „ Issel, Malak. Mar rosso, p. 134, No. 285.
„ *tuberosus*, Kobelt, Jahrb. deutsch. malak. Gesellsch., 1878, p. 361, sp. 49.
„ „ Kobelt, Conch. Cab. (ed. Küster), p. 204, pl. lviii. figs. 5, 6.
Tritonium (*Cymatium*) *tuberosum*, v. Martens, Moll. Mauritius, &c., p. 266.
Triton (*Gutturnium*) *tuberosus*, Tryon, Manual, vol. iii. p. 23, pl. xiii. figs. 111–113.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—From the Red Sea (Issel) and Africa to the Malay Archipelago and Polynesia (v. Martens); also the West Indies (d'Orb.).

I give *Triton antillarum*, d'Orb., as a synonym on the authority of Professor v. Martens, who adds that *Triton albocingulatum*, Desh., is doubtfully distinguishable from Lamarck's species.

7. *Triton* (*Gutturnium*) *elongatus*, Reeve.

Triton elongatus, Reeve, Proc. Zool. Soc. Lond., 1844, p. 117.
„ „ Reeve, Conch. Icon., vol. ii. pl. xv. p. 59.
„ „ Kobelt, Jahrb. malak. Gesellsch., 1878, p. 363, sp. 71.
„ „ Kobelt, Conch. Cab. (ed. Küster), p. 208, sp. 49, pl. lviii. fig. 9.
„ (*Gutturnium*) *vespaceus*, var., Tryon, Manual, vol. iii. p. 22, pl. xii. fig. 96.

July 21, 1874. Reefs off Tongatabu.

Habitat.—Philippines (Reeve).

Mr Tryon puts this species as well as *Triton gracilis*, Reeve, under *Triton vespaceus*, Lam., but he can hardly have had true specimens of the species before him when he formed this opinion. The distribution of the whole genus is so very remarkable that it is a pity to bring confusion into the study of this point by errors of identification. In the Shuttleworth Collection at Berne there are sixteen specimens bearing this name, including two different species, but none of them is *Triton elongatus*, Reeve.

8. *Triton* (*Gutturnium*) *gracilis*, Reeve.

Triton gracilis, Reeve, Proc. Zool. Soc. Lond., 1844, p. 117.
„ „ Reeve, Conch. Icon., vol. ii. pl. xv. fig. 58.
Tritonium (*Gutturnium*) *gracile*, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 173, No. 18.
Triton gracilis, Kobelt, Jahrb. malak. Gesellsch., 1878, p. 363, sp. 72.
„ „ Kobelt, Conch. Cab. (ed. Küster), p. 243, pl. lxvii. fig. 5.
„ (*Gutturnium*) *vespaceus*, var., Tryon, Manual, vol. iii. p. 22, pl. xii. fig. 97.

Station 212. January 30, 1875. Lat 6° 54′ N., long. 122° 18′ E. Off Malanipa, Basilan Strait, Philippines. 10 to 20 fathoms. Sand.

Habitat.—North-east Australia, 14 to 30 fathoms (Brazier); Philippines (British Museum).

9. *Triton* (*Lagena*) *magellanicus* (Chemnitz).

Murex magellanicus, Chemnitz, Conch. Cab., vol. x. p. 275, pl. clxiv. fig. 1570.
„ „ Dillwyn, Cat., vol. ii. p. 725, sp. 87.
Triton cancellatum, Lamarck, Anim. s. vert., vol. vii. p. 187, and (ed. Desh.) vol. ix. p. 638, sp. 24.
„ „ Encycl. méthod., vers, pl. cccxv. fig. 1.
„ „ Kiener, Iconog., p. 35, sp. 36, pl. xvi. fig. 1.
Fusus cancellatus, Reeve, Conch. Icon., vol. v. pl. xvi. fig. 62.
Triton (*Argobuccinum*) *cancellatus*, Kobelt, Jahrb. deutsch. malak. Gesellsch., 1878, p. 368, sp. 112.
„ *cancellatus*, Kobelt, Conch. Cab. (ed. Küster), p. 246, sp. 94, pl. lxvi. fig. 1.
„ (*Priene*) *cancellatus*, Tryon, Manual, vol. iii. p. 34, pl. xvi. figs. 164–167, pl. xvii. figs. 170–172.

Station 144A. December 26, 1873. Lat. 46° 48′ S., long. 37° 49′ 30″ E. Off Marion Island. 69 fathoms. Volcanic sand.

Station 309 (?). January 5, 1876. Lat. 50° 56′ S., long. 74° 15′ W. South-west Patagonia. 40 fathoms. Blue mud.

Habitat.—Straits of Magellan (Chemnitz); Cape Horn (British Museum).

The *Murex magellanicus* of Lamarck having recovered its proper specific name of (*Trophon*) *geversianus*, given it by Pallas, there is no excuse for following Lamarck in depriving this Triton of the name given it by Chemnitz, and that the more since there are *scabrous* questions of priority as to the name *Murex cancellatus* which were better avoided altogether.

Mr Tryon (*loc. cit.*) quotes Dr P. Carpenter in support of his opinion that *Triton oregonensis*, Redfield, is synonymous with this species. Mr Tryon, however, overlooks the fact that it is with *Triton cancellatus*, von Middendorff, "*not Lamarck*," that Dr Carpenter accepts *Triton oregonensis* as synonymous. This any one will see on consulting the British Association Report on Moll. W. Coast N. America, 1863, pp. 532, 534, 563, 583, 613, 661, 683. The whole subject is exhaustively treated by Lischke, Japan. Meer. Conch., vol. ii. p. 166, and vol. iii. p. 31.

10. *Triton* (*Lagena*), n. sp.

Station 145. December 27, 1873. Lat. 46° 43′ S., long. 38° 4′ 30″ E. Between Marion Island and Prince Edward Island. 140 fathoms. Volcanic sand.

This shell is not full-grown, and has the pillar a little broken. It extremely resembles *Triton magellanicus*, Chemnitz, from Patagonia, but it is shorter in the spire, the sculpture is not identical, the embryonic apex is a little larger, higher, and marked with three slightly raised spiral threads, and the pillar is distinctly shorter. The young shells of this section of the genus are peculiarly difficult of identification, but the apex is unmistakably that of a *Triton*.

11. *Triton* (*Distorsio*) *cancellinus* (de Roissy).

Martini, Conch. Cab., vol. ii. p. 85, pl. xli. figs. 405, 406.
Murex cancellinus, de Roissy, Buffon Hist. nat., Moll., vol. vi. p. 56, sp. 12.
„ *mulus*, Dillwyn, Cat., vol. ii. p. 704, sp. 45.
„ „ Wood, Ind. Test., p. 129, pl. xxvi. fig. 46.

Triton clathratum, Lamarck, Anim. s. vert., vol. vii. p. 186, and (ed. Desh.) vol. ix. p. 637, sp. 22 (see Deshayes' note).
" " Deshayes, Encycl. méthod., vers, vol. iii. p. 1061, sp. 15, pl. cccexiii. fig. 4.
" " Reeve, Conch. Icon., vol. ii. pl. xii. fig. 45.
" " Kiener, Iconog., p. 21, sp. 16, pl. xiv. fig. 1.
" " Eydoux and Souleyet, "Bonite," vol. ii. p. 623, pl. xliv. fig. 26.
Persona cancellina, Kobelt, Jahrb. deutsch. malak. Gesellsch., 1878, p. 370, sp. 2.
Triton cancellinus, Kobelt, Conch. Cab. (ed. Küster), p. 200, sp. 41, pl. lvii. figs. 5, 6.
Distorsio cancellinus, Tryon, Manual, vol. iii. p. 35, pl. xvii. figs. 175–178.
Triton (Persona) cancellinus, E. A. Smith, "Alert" Collections, p. 500, No. 59.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Malanipa, Basilan Strait, Philippines. 10 to 20 fathoms. Sand.

Habitat.—Mindanao, Philippines (British Museum).

This species is not *Murex reticularis*, Linne, which, as Mr Hanley (Ipsa Linn. Conch., p. 291) has pointed out, must be considered as the *Ranella tuberculata*, Brod., in so far as any opinion at all is possible on the subject. I have not therefore quoted v. Martens (Mauritius, p. 267) for this species, which he has referred (misled by Mörch) to that of Linne.

2. *Ranella*, Lamarck, 1812.

Species.

1. *Ranella margaritula*, Desh.
2. *Ranella rana*, Linne.
3. *Ranella fijiensis*, Wats.
4. *Ranella (Lampas) granifera*, Lam.
5. *Ranella (Lampas) Thomæ*, d'Orb.
6. *Ranella (Argobuccinum) argus*, Gm.
7. *Ranella (Argobuccinum) leucostoma*, Lam.
8. *Ranella (Argobuccinum) pusilla*, Brod.
9. *Ranella (Eupleura) perca*, Perry.
10. *Ranella (Aspa) marginata*, Gm.

1. *Ranella margaritula*, Deshayes.

Chemnitz, Conch. Cab., vol. iv. pp. 106, 109, pl. cxxxiii. figs. 1268, 1269.
Ranella margaritula, Deshayes, Voy. de Bellanger, Zool., pl. iii. figs. 13–15.
Ranella neglecta, Sowerby Jr., Conch. Ill., p. 22.
" *margaritula*, Kiener, Iconog., p. 14, No. 9, pl. viii. fig. 2.
" " Lamarck (ed. Desh.), vol. ix. p. 550, No. 16.
" " Reeve, Conch. Icon., vol. ii. pl. iii. fig. 15.
" " Kobelt, Jahrb. malak. Gesellch., 1876, p. 332, sp. 44.
" " Küster, Conch. Cab. (ed. Küster), p. 137, pl. xxxviii. figs. 4, 5.
" " Tryon, Manual, vol. iii. p. 37, pl. xviii. fig. 4.

September 18, 1874. Arru Island, south-east of Papua. (No depth given.)
Station 208. January 17, 1875. Lat. 11° 37′ N., long. 123° 31′ E. Philippines. 18 fathoms. Blue mud.

Habitat.—The East Indian Islands (Küster).

2. *Ranella rana* (Linne).

Murex rana, Linne, Syst. Nat. (ed. 12), p. 1216, No. 527.
„ „ Chemnitz, Conch. Cab., vol. iv. p. 106, pl. cxxxiii. figs. 1270, 1271.
„ „ Dillwyn, Catalogue, vol. ii. p. 691, sp. 21.
„ „ Wood, Ind. Test., p. 127, pl. xxv. fig. 21.
Ranella crumena, Encycl. méthod., vers, pl. cccexii. fig. 3.
„ „ Lamarck, Anim. s. vert, vol. vii. p. 151, and (ed. Desh.) vol. ix. p. 544, sp. 5 (see Deshayes' note).
„ *elegans*, Kiener, Iconog., p. 4, sp. 2, pl. iii. fig. 1.
„ *albivaricosa*, Reeve, Proc. Zool. Soc. Lond., 1844, p. 136.
„ „ Reeve, Conch. Icon., vol. ii. pl. i. fig. 2.
Murex rana, Hanley, Ipsa Linn. Conch., pp. 284, 520.
Ranella albivaricosa, Küster, Conch. Cab. (ed. Küster), p. 133, sp. 10, pl. xxxviii. figs. 8, 9.
„ *rana*, Kobelt, Jahrb. deutsch. malak. Gesellsch., 1876, p. 331, sp. 39.
„ „ Lischke, Japan. Meer. Conch., vol. i. p. 50.
Bursa rana, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 175, No. 21.
Ranella albivaricosa, Tryon, Manual, vol. iii. p. 38, pl. xviii. figs. 5, 6.
„ *rana*, Dunker, Index Moll. Mar. Japon., p. 31.
„ „ E. A. Smith, "Alert" Collections, p. 56, No. 45.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, North Australia. 28 fathoms. Green mud.

Station 189. September 11, 1874. Lat. 9° 36′ S., long. 137° 50′ E. West of Cape York, North Australia, and south-west of Papua. 25 fathoms. Green mud.

Station 190. September 12, 1874. Lat. 8° 56′ S., long. 136° 5′ E. Arafura Sea. 49 fathoms. Green mud.

October 6, 1874. Amboina. 15 to 25 fathoms.

Station 203. October 31, 1874. Lat. 11° 6′ N., long. 123° 9′ E. Philippines. 20 fathoms. Mud.

Habitat.—North-east Australia and Torres Strait, 20 to 30 fathoms (Brazier); Moluccas (Berne Mus., Coll. Shuttleworth); China and Japan (Lischke).

Why Reeve (*loc. cit.*), recognising this as Linne's species, published it under a new name, and why Reeve's name is accepted, is not obvious. Hanley (*loc. cit.*) assures us that though other species are mixed up with it, yet *Ranella rana*, Linne = *Ranella albivaricosa*, unmistakably appears under its proper name in the Linnean collection.

3. *Ranella fijiensis*, Watson (Pl. XXXIV. fig. 7).

Ranella fijiensis, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 270.

Station 173. July 24, 1874. Lat. 19° 9′ 35″ S., long. 179° 41′ 50″ E. Fiji. 315 fathoms. Coral mud.

Station 204A. November 2, 1874. Lat. 12° 43′ N., long. 122° 9′ E. Philippines. 100 to 115 fathoms. Green mud.

Shell.—Ovate, turreted, conical, strong, but not heavy, with a long pillar, high narrow varices, and a superior row of pointed circular-based tubercles, of a dead ruddyish yellow with a few chestnut spots and suffused but paler patches. *Sculpture:* Longitudinals—there are high, narrow, alternate varices, which on the earlier whorls follow continuously, but rather lag behind their true place; on the body-whorl they are dislocated by being thrown considerably in front of it; the last one does not extend to the snout; there are minute, not very continuous, uneven, longitudinal threads over the whole surface. Spirals—the last whorl, about a third of its height below the suture, is carinated at its periphery by a row of sharp prominent distant round-based tubercles, which are hardly continuous nor set on a cord; on the spire this row nearly bisects the whorls, but is a little inferior; between this row and the suture there are placed alternately 3 fine tubercled threads and 2 tubercled cords, of which latter the upper is the stronger; its tubercles and those of the thread above it tend to coalesce at the suture; less than half-way below the periphery there is a row of smaller, less prominent, more numerous, pointed tubercles set on a cord; half-way between these two rows is a cord with close-set rounded tubercles having two threads below it and a thread and a fine tubercled cord above it, which last lies on the bases of the tubercles forming the peripheral carination. On the base are four tubercled cords, the first and second of which have each a fine tubercled thread above them, and the fourth a similar thread below it defining the base of the pillar; on the pillar there are six cords more or less tubercled, of which three are above, two are on the under side, and one at the edge: there is little difference in the strength or arrangement of the spiral cords or tubercles above or below the periphery; they all rise into very considerable prominence and sharpness in crossing the varices. The whole shell is covered by minute threads, which form knots where they cross the rather weaker longitudinal threads, giving the surface somewhat of the texture of a fine file. *Colour* dead white, with a superficial ruddy-yellow tinge, which has a few lines and patches of deeper hue, and a few spots of chestnut. *Epidermis:* only a few traces of a very thin smooth membranaceous skin remain. *Spire* high, narrow, and small, conical, somewhat scalar from the infrasutural shoulder, whose angularity breaks the conical outline. *Apex* consists of three polished, turbinated, ochraceous whorls, whose tip is immersed. *Whorls* 8 to 9 in all, with a sloping flat shoulder, a carinated periphery, and a slight straight contraction from this point to the suture; the rounded base contracts quickly and bears a long, prominent, bent and twisted pillar, which is lost on the right side by the outward sweep of the base, which advances very far forward, but leaves a short, square, projecting snout. *Suture* distinct and deeply impressed, on the upper whorls slightly channelled. *Mouth* oval; the upper canal is distinct, but neither long, wide, nor deep; the lower canal is open and moderate in size; but the whole snout is rather exceptionally square and prominent. *Outer lip* somewhat angular in its course, thin, prominent beyond the varix, patulous on its inner face, but externally scarcely at all

reflected; it is thickened within, and has very near its edge teeth in groups of 3, 2, 2, 3, so placed as to avoid the longer spirals of the external sculpture. *Inner lip* spreads somewhat thinly and with a slightly disconnected edge across the body; it then runs straight down the middle of the pillar; at the top of the mouth a long, somewhat subdivided, and upward-curved tooth defines the canal; below this there are about nine not very definite teeth on the body; below the last of these is a wider break, and below this on the pillar are about six more, rather strong at first, but steadily becoming smaller; parallel to the edge the reverted flap of the lip is prominent below the callus glaze, and finally stands out beyond this glaze as a margin to the canal. H. 2·1 in. B. 1·44. Penultimate whorl, height 0·45. Mouth, height to point of canal 1·2, breadth from edge of callus 0·7.

This species, better than any I know, forms a link between the *crumena* and *granifera* groups of *Ranella*. It is very near *Ranella nobilis*, Reeve; but the form there is much broader, and the system of tubercles quite different. *Ranella affinis*, Brod., is very like; but in that the form is much more regularly conical, the suture, so far from being impressed, is run up on the preceding whorl, the varices run down in straight regular succession, the apex is ruddy purple, and the pillar is much shorter, thicker, and reflected. *Ranella ponderosa*, Reeve, has near affinities in arrangement of tubercles and teeth of outer lip, but is larger in form and quite different in colour and texture. *Ranella rana*, Linne, has a much sharper apex, a much squatter form, and much more pointed tubercles. Than *Ranella livida*, Reeve, the Challenger species is much shorter, thinner, more tubercled, its suture is more impressed, and its pillar longer and straighter. Than *Ranella subgranosa*, Beck, it is a much less compact form, the spire being higher and smaller, the base and suture much more contracted; the body-whorl is in all ways much smaller and shorter, but broader in proportion to height.

4. *Ranella* (*Lampas*) *granifera*, Lamarck.

Chemnitz, Conch. Cab., vol. iv. p. 72, pl. cxxvii. figs. 1224–1227.
Ranella granifera, Lamarck, Anim. s. vert., vol. vii. p. 153, and (ed. Desh.) vol. ix. p. 548, sp. 9.
,, ,, Deshayes, Encycl. méthod., vers, vol. iii. p. 880, sp. 7, pl. cccxiv. fig. 4.
,, ,, Reeve, Conch. Icon., vol. ii. pl. vi. fig. 30.
,, ,, Kiener, Iconog., p. 16, sp. 11, pl. xi. fig. 1.
Tritonium graniferum, Quoy and Gaimard, "Astrolabe," Zool., pl. xl. fig. 21.
Ranella granifera, Gray, Fig. of Moll. Animals, vol. i. pl. iv. fig. 2.
,, ,, Krauss, Südafrik. Moll., p. 113, sp. 2.
,, ,, Issel, Malacol. Mar Rosso, p. 134.
,, ,, Küster, Conch. Cab. (ed. Küster), p. 143, pl. xxxix. fig. 1.
,, ,, v. Martens, Moll. Mauritius, &c., p. 268.
,, (*Lampas*) *granifera*, Tryon, Manual, vol. iii. p. 41, pl. xxii. figs. 35–37.
,, *granifera*, Dunker, Index Moll. Mar. Japon., p. 31.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Natal (Krauss); the Red Sea (Issel); the Indian Ocean and Australia (v. Martens).

5. *Ranella (Lampas) thomæ*, d'Orbigny.

Ranella thomæ, d'Orbigny, Moll. Cuba, vol. ii. p. 164, pl. xxiii. fig. 23 (not 24).
„ „ Fischer, Coq. Guadaloupe, Revue coloniale, 1858, p. 8, sp. 2.
„ „ Kobelt, Jahrb. malak. Gesellsch., 1876, p. 327, sp. 2.
„ *cruentata*, var., Tryon, Manual, vol. iii. p. 40, pl. xxi. fig. 25.

February 1873. Rocks off Santa Cruz, Tenerife.

Habitat.—St Thomas, West Indies (d'Orbigny), Madeira (Watson).

D'Orbigny (*loc. cit.*) says, "Cette belle espèce a été pêchée par une grande profondeur près de l'île Saint-Thomas." His figure has character, but is inaccurately drawn. His type-specimen in the British Museum, though a young and rubbed shell, is unmistakably the same as the Tenerife species of the Challenger. I have dredged it living in Madeira at three different places under 50 fathoms, and there are in the British Museum two unnamed specimens brought by MacGillivray from the Cape Verde Islands which are certainly this species. Have any other specimens been found in the West Indies, or was d'Orbigny's specimen accidentally introduced in ballast or through fraud of some collector? He does not speak as if he had got more than one specimen. That is the one preserved in the British Museum, and it was a dead shell. I have quoted Dr Fischer's Guadaloupe list, but I understand him to mean merely that d'Orbigny had got it in the Lesser Antilles. It is very like the Philippine species *Ranella rhodostoma*, Beck, but that is a hunchier shell, having a lower and less scalar spire, and being shorter and more tumid at the base; the columella is shorter, and instead of being straight, as in *Ranella thomæ*, is strongly curved to the right; the anterior canal, in spite of the thicker lip, is shorter and less projecting. The resemblance which at first sight strikes one as strong utterly disappears on closer study and the examination of additional specimens. Mr Tryon says "they do not differ at all from Philippine and Mauritian specimens;" and this opinion I fear so able a judge as Mörch must have to some extent indorsed, but I have failed to find the reference given by v. Martens in the Meeresfauna der Insel Mauritius, &c., Moll., p. 268 (Mörch, Mal. Blätt., 1877). But, whoever has held the opinion, it is a mistaken one, as any one capable of recognising differences will not fail to see when once his attention has been directed to the subject.

6. *Ranella (Argobuccinum) argus* (Gmelin).

Chemnitz, Conch. Cab., vol. iv. p. 75, pl. cxxvii. fig. 1223.
Murex argus, Gmelin, Syst. Nat., p. 3547, No. 78.
„ „ Dillwyn, Cat., vol. ii. p. 694, sp. 26.
„ „ Wood, Ind. Test., p. 127, pl. xxv. fig. 27.
Ranella argus, Lamarck, Anim. s. vert., vol. vii. p. 151, and (ed. Desh.) vol. ix. p. 543, sp. 4, and *Ranella vexillum*, p. 553, sp. 20.
„ (*Triton*) *ranelliformis*, King, Zool. Journ., 1832, vol. v. p. 347.
„ *argus*, Deshayes, Encycl. méthod., vers, vol. iii. p. 878, sp. 3, pl. cccxiv. fig. 3.
„ „ Kiener, Iconog., p. 31, sp. 23, pl. viii. fig. 1.
„ *vexillum*, Sowerby, Conch. Ill. (*Ranella*), pl. i. fig. 3.
„ *Kingii*, d'Orbigny, Amérique mérid., vol. v. p. 451.
„ *argus*, Reeve, Conch. Icon., vol. ii. pl. iii. fig. 12, and *Ranella vexillum*, fig. 13.
„ „ Krauss, Südafrik. Moll., p. 113, sp. 1.

Ranella argus, Küster, Conch. Cab. (ed. Küster), p. 125, sp. 2, pl. xxxvii. figs. 5, 6, and *Ranella vexillum*, p. 126, sp. 3, pl. xxxviiia. figs. 1–3.
Bursa (Apollon) proditor, v. Frauenfeldt, "Novara" Moll., p. 4, pl. i. fig. 1.
Ranella argus, v. Martens, Südafrik. Moll., Jahrb. deutsch. malak. Gesellsch., 1874, p. 134, sp. 113.
„ (*Apollon*) *argus*, Kobelt, Jahrb. deutsch. malak. Gesellsch., 1876, p. 326, sp. 1, and *Ranella* (*Apollon*) *proditor*, sp. 3, and *Ranella vexillum*, sp. 4.
„ (*Bursa*) *proditor*, Vélain, Moll. St Paul et Amsterdam, p. 100, pl. ii. fig. 5.
„ *argus*, v. Martens, Crit. List New Zealand Moll., p. 23.
„ *vexillum*, Hutton, Manual, p. 65.
„ (*Argobuccinum*) *argus*, Tryon, Manual, vol. iii. p. 44, pl. xxiv. figs. 61–65.

October 15, 1873. Tristan da Cunha. Shore.

Station 135c. October 17, 1873. Lat. 37° 25′ 30″ S., long. 12° 28′ 30″ W. Nightingale Island, Tristan da Cunha. 100 to 150 fathoms.

Habitat.—New Zealand, Australia, Tasmania, St Paul and Amsterdam Islands, Cape of Good Hope, South America.

This form from Tristan da Cunha, which bears in the British Museum the name *Apollon tristensis*, is somewhat longer and narrower than the type, with a more tumid and less scalar spire, but this latter feature arises from the varices being more continuous, and of this peculiarity examples are not wanting, especially in the form which Sowerby has described as *Ranella vexillum*. The opinion, strongly expressed by Deshayes and others, of the specific distinctness of this form from the *Ranella argus*, Gm., deserves much weight, and it is not difficult to pick out specimens very strongly marked with the distinguishing features of difference which have been dwelt on by the authors I refer to; but, on careful survey of a large number of shells, I felt driven to the conclusion that they all belonged to one species. Having formed this conviction, it was with great satisfaction that I found it was the opinion already expressed (Jahrb., *loc. cit.*) by so thoroughly competent a judge as v. Martens, and that substantially on the same grounds. At the same time, at p. 268 of his Beiträge zur Meeresfauna der Insel Mauritius, &c., Mollusken, referring to Dufo, p. 55, as attributing *Ranella argus*, Lam., to Mahé, in the Indian Ocean, he says: "Es ist dies eine südafrikanische Art welche nicht wohl so weit in die Tropenzone hinein sich erstrecken dürfte; vermuthlich falsche Bestimmung." Notice too his identification of it as a New Zealand species.

7. *Ranella* (*Argobuccinum*) *leucostoma*, Lamarck.

Ranella leucostoma, Lamarck, Anim. s. vert., vol. vii. p. 150, and (ed. Desh.) vol. ix. p. 542, sp. 2.
„ „ Deshayes, Encycl. méthod., vers, vol. iii. p. 878, sp. 12.
Triton leucostoma, Quoy and Gaimard, "Astrolabe," Zool., vol. ii. p. 546, pl. xl. figs. 3–5.
Ranella leucostoma, Kiener, Iconog., p. 29, sp. 21, pl. ix. fig. 1.
Triton leucostoma, Gray, Fig. Moll. Animals, vol. ii. pl. lxxxv. fig. 1 (*Ranella leucostoma*), pl. cvi. fig. 2.
Ranella leucostoma, Reeve, Conch. Icon., vol. ii. pl. i. fig. 2.
„ „ Küster, Conch. Cab. (ed. Küster), p. 127, sp. 2, pl. xxxviia. fig. 4.
Bursa leucostoma, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 189, No. 18.
Ranella leucostoma, Hutton, Cat. New Zealand Shells, p. 13.
„ „ v. Martens, Crit. List New Zealand Moll., p. 23.
„ „ Hutton, Manual New Zealand Moll., pp. 64, 202.
„ (*Argobuccinum*) *leucostoma*, Tryon, Manual, vol. iii. p. 42, pl. xxiii. figs. 53, 54.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Port Jackson, Australia (British Museum).

I greatly doubt the identification of the New Zealand shells which have been regarded as belonging to this species; such of these as I have seen are only worn specimens (possibly a var.) of *Ranella argus*, Gm. At the same time, I ought to say that Hutton expresses very decidedly an opposite opinion (see Manual New Zealand Moll., pp. 64 and 202). Von Martens, however, only refers to it as "stated to have been found" in New Zealand, and does not seem to have had actual specimens thence before him (see Crit. List New Zealand Moll., p. 23).

8. *Ranella* (*Argobuccinum*) *pusilla*, Broderip.

Ranella pusilla, Broderip, Proc. Zool. Soc. Lond., 1832, p. 194.
„ „ Sowerby, Conch. Ill., fig. 1.
„ „ Reeve, Conch. Icon., vol. ii. pl. viii. fig. 44.
„ „ Krauss, Südafrik. Moll., p. 113, sp. 6.
Bursa pusilla, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 175, No. 24.
Ranella pusilla, E. A. Smith, Marine Shells from Andamans, Proc. Zool. Soc. Lond., 1878, p. 815, No. 50, pl. l. fig. 15.
„ „ v. Martens, Moll. Mauritius, &c., p. 268.
„ (*Argobuccinum*) *pusilla*, Tryon, Manual, vol. iii. p. 44, pl. xxiii. fig. 50, pl. xxiv. figs. 56–58, 66.

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ E. Inside the reef at Tongatabu. 18 fathoms. Coral mud.

July 29, 1874. Levuka, Fiji. 12 fathoms.

September 8, 1874. Cape York, off Albany Island, Torres Strait. 3 to 12 fathoms.

Habitat.—North-east and North Australia, 5 to 30 fathoms (Brazier); Andamans, Lord Hood and Philippine Islands, Red Sea (E. A. Smith); Natal (Krauss); New Caledonia, Tahiti, Lord Hood Islands, Sandwich Islands (Tryon); Mauritius and Polynesia (v. Martens).

9. *Ranella* (*Eupleura*) *perca* (Perry).

Biplex perca, Perry, Conchology, 1811, pl. iv. fig. 5.
Ranella pulchra, Sowerby, Conch. Ill., fig. 19.
„ „ Kiener, Iconog., p. 8, sp. 5, pl. vi. fig. 1.
„ *perca*, Lamarck, Anim. s. vert. (ed. Desh.) vol. ix. p. 556, sp. 24.
„ *pulchra*, Reeve, Conch. Icon., vol. ii. pl. viii. fig. 47.
„ *pulchella*, E. Forbes, "Rattlesnake," 1852, Appendix, p. 382, pl. iii. fig. 6.
„ *jucunda*, A. Adams, Proc. Zool. Soc. Lond., 1854, p. 70, No. 3.
Bursa (*Eupleura*) *pulchella*, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 176, No. 26.
Ranella (*Argobuccinum*) *pulchra*, Tryon, Manual, vol. iii. p. 43, pl. xxiii. fig. 51.
„ *perca*, Dunker, Index Moll. Mar. Japon., p. 32.
„ *pulchella*, E. A. Smith, "Alert" Collections, p. 56, No. 46.

September 8, 1874. Flinders Passage, Cape York, North Australia. 7 fathoms.

Habitat.—North-east Australia (Macgillivray, see Forbes); Torres Strait and New Guinea (Brazier).

10. *Ranella* (*Aspa*) *marginata* (Gmelin).

Knorr, Sammlung von Merkwürdigkeiten fortgesetzt von Walch, vol. ii. pt. 1, p. 128, pl. iv.c., figs. 8, 9, and (French translation, 1775–78, Recueil, &c.) vol. ii. pt. 2, p. 109, pl. iv.c., figs. 8, 9.[1]

Martini, Conch. Cab., vol. iii. p. 425, pl. cxx. figs. 1101, 1102.

Buccinum marginatum, Gmelin, p. 3486, No. 63.

„ „ Brocchi, Conch. foss. subapp., vol. ii. p. 332 (2d ed. vol. ii. p. 109), pl. iv. fig. 17.

Ranella lævigata, Lamarck, Anim. s. vert., vol. vii. p. 154, and (ed. Desh.) vol. ix. p. 550, No. 15.

„ „ Philippi, Enum. Moll. Sic., vol. i. p. 212, vol. ii. p. 183.

„ *marginata*, Sowerby, Genera, Rec. and Foss. Shells, vol. ii. pl. ccxxiii. fig. 2.

„ *lævigata*, Reeve, Conch. Icon., vol. ii. pl. viii. fig. 50.

„ „ Kiener, Iconog., p. 34, sp. 25, pl. xiii. fig. 2.

„ „ Deshayes, Encycl. méthod., vers, vol. iii. p. 882, No. 11.

„ „ Küster, Conch. Cab. (ed. Küster), p. 154, sp. 33, pl. xxxixa. fig. 8.

„ *marginata*, Hörnæs, Foss. Moll. Wien, vol. i. p. 214, sp. 4, pl. xxi. figs. 7–11.

„ *lævigata*, Chenu, Manuel, vol. i. p. 155, fig. 721.

„ „ M'Andrew, Brit. Assoc. Report, 1851, p. 32.

Ranella marginata, Tiberi, Moll. Terreni terz. Piemonte, &c., vol. i. p. 243.

„ *lævigata*, v. Martens, Conch. Westafr., Jahrb. malak. Gesellsch., 1876, p. 236, pl. ix. fig. 9.

„ *marginata*, Kobelt, Catal. Ran., Jahrb. malak. Gesellsch., 1876, p. 333, sp. 50.

„ „ Seguenza, Form. terz. Calabria, p. 50, fig. 108.

„ (*Aspa*) *marginata*, Tryon, Manual, vol. iii. p. 42, pl. xxiii. fig. 52.

February 10, 1873. Tenerife. 70 fathoms.

Habitat.—The coast and islands of North-western Africa.

Fossil.—It is found from the Italian Middle Miocene onwards.

There are specimens of this species in the British Museum from Benguela, in about lat. 12° S., in M'Andrew's collection from Orotava, and I have myself dredged it alive at Madeira. Von Martens (*loc. cit. supra*) mentions that Dr Studer dredged it among the Cape Verde Islands. Even when fresh the shell a good deal resembles a fossil. The operculum of this species is unlike that either of *Ranella* or *Apollon*, and resembles most of all that of *Cassis*, being elliptical and concentric with a laterally eccentric nucleus.

3. *Nassaria*, Link, 1807.

Species.

1. *Nassaria sinensis*, Sow.
2. *Nassaria suturalis*, A. Ad.
3. *Nassaria amboynensis*, Wats
4. *Nassaria campyla*, Wats.

1. *Nassaria sinensis*, Sowerby.

Nassaria sinensis, Sowerby, Thes. Conch., vol. iii. pt. 19, p. 86, sp. 8, pl. ccxx. figs. 8, 9.
Hindsia sinensis, Kobelt, Conch. Cab. (ed. Küster), p. 323, sp. 11, pl. lxxvii. fig. 8.

September 9, 1874. Cape York, off Albany Island, Torres Strait. 3 to 13 fathoms.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. 28 fathoms. Green mud.

Habitat.—China Seas (Sowerby).

[1] I have given these in full because in Lamarck they are incorrectly cited.

2. *Nassaria suturalis*, A. Adams, var. *bitubercularis*, A. Adams.

Hindsia suturalis, A. Adams, Proc. Zool. Soc. Lond., 1853, p. 183, sp. 6, and 1850 (*Hindsia bitubercularis*) sp. 8, pl. (Moll.) x. fig. 6.

Nassaria bitubercularis, Sowerby, Thes. Conch., vol. iii. p. 86, sp. 2, pl. ccxx. fig. 5, and (*Nassaria suturalis*) figs. 15, 16.

,, *suturalis*, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 177, No. 32.

Hindsia suturalis, Kobelt, Conch. Cab. (ed. Küster), p. 318, sp. 4, pl. lxxvii. figs. 11, 12.

Nassaria suturalis, E. A. Smith, "Alert" Collections, p. 49, No. 31.

Station 208. January 17, 1875. Lat. 11° 37′ N., long. 123° 31′ E. Philippines. 18 fathoms. Blue mud.

Habitat.—North Australia and New Guinea, 5 to 11 fathoms (Brazier); Malacca (Adams).

The *Nassaria bitubercularis*, A. Ad., figured in the Proc. Zool. Soc. Lond., 1850 (*ut supra*), seems to represent a different species from that thus named in the British Museum. In the explanation of the plates at p. 4, the figures are named *Nassaria bitubercularis*, A. Ad., and there is a reference to the year 1850, but no page in the Proceedings is given. I have, however, quoted according to the nomenclature of the British Museum. Mr Edgar A. Smith (*loc. cit. supra*) is of opinion that *Nassaria suturalis* and *Nassaria sinensis*, Sow., are only varieties of one species, which I can very well believe to be true. At the same time I confess I thought them fairly separable.

3. *Nassaria amboynensis*, Watson (Pl. XIV. fig. 11).

Nassaria amboynensis, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 273.

October 6, 1874. Amboyna. 15 to 25 fathoms.

Shell.—Ovate, conical, pointed, varixed, brown-banded, a very contracted base, with a short, recurved, and somewhat twisted snout. *Sculpture:* Longitudinals—there are on each whorl 11 or 12 (on the earliest about 10), strong, prominent, well-defined, rounded, curved, and inclined ribs, of which about 2 on each whorl are stronger than the rest; these ribs extend to the beginning of the snout, and swell up over, but are interrupted by, the suture which at the top of the whorls cuts them off; they run down the spire with an inclination towards the right; the rather deep interstices are fully broader than the ribs: besides these, the whole surface is roughened with slight unequal lines of growth, which are most distinct on the earlier whorls. Spirals—the surface is beset with unequal threads, of which about 6 on the body and 4 on the base are stronger and more prominent than the rest; the two in the middle of the whorls are most so of all; between these are 3, 4, or 5 unequal, raised, and sharpish round threads, especially prominent on the longitudinal ribs; the hollows between these are variable in width, deep, and flat-bottomed, though sometimes filled by another minute thread; these intervals are finely scored, while the threads are coarsely roughened and crumpled by the longitudinal lines of growth: besides these, the

surface is finely fretted with microscopic spirals; on the snout are about 10 coarsish somewhat crumpled threads, with minute sharp lines in their interstices. *Colour* tawny white, with a broadish chestnut band below the periphery, and less continuous stains of the same up to the suture and on the base and snout. *Spire* high turreted, conical, small and sharp at the point, with an almost continuous outline in spite of the deep suture. *Apex* partly broken, but evidently consisting of 2 or 3 polished, rounded, turbinated whorls. *Whorls* 9, exclusive of the embryonic whorls, ventricose, rounded, of regular increase; but the last is somewhat disproportionately large; the base is rounded, but contracted and a little flattened towards the snout, which is moderate; both as to length and breadth, and advances straight in the axis of the shell, but with a twist and a strong backward bend on itself. *Suture* is itself invisible, but is very strongly defined by the deep undulated furrow, which at the top of the whorls sinks in behind the longitudinal ribs and cuts them off from the base of the preceding whorl. *Mouth* oval, rather small, deep, perpendicular, and very little oblique; from its lower left corner rises a strong, deep, equal, slightly curved canal, whose direction is distinctly, but not strongly, to the left. *Outer lip:* its nearly semicircular curve is slightly flattened about the middle, and bags a little toward the lower outer corner; at its upper corner it advances a good deal and rises a little on the body-whorl; its sharp and contracted margin, which projects from the last and massive varix, is crenulated; remote from the edge it is scored by 9 rather long, narrow, sharp-topped teeth, the first and last two of which are stronger than the rest; the first is a little remote from the upper angle of the mouth, while the last is on the very edge of the canal. *Inner lip* spreads patulously, but not broadly, on the body-whorl in a thin, defined, porcellanous layer; it runs straight down the pillar as a sharp projecting edge; it is scored within by about 9 teeth, of which the first is short and strong, the second long and strong, the third and fourth long and weak, the fifth, sixth, and seventh short and weak, while the eighth and ninth are strong and coil round the point of the pillar. On the left side of the canal are 4 or 5 tubercles. H. 1·37 in. B. 0·84. Penultimate whorl, height 0·26. Mouth, height (exclusive of canal) 0·49, breadth 0·3. Length of canal 0·29, breadth 0·07.

This species has much resemblance to *Nassaria acuminata*, Reeve, but is shorter, squatter, coarser, with more ribs, is deeper in suture; the canal is shorter, more recurved, and more twisted.

4. *Nassaria campyla*,[1] Watson (Pl. XIV. fig. 12).

Nassaria kampyla, Watson, Prelim. Report, pt. 15, Journ. Linn. Soc. Lond., vol. xvi. p. 594.

Station 164B. June 13, 1874. Lat. 34° 13′ S., long. 151° 38′ W. Off Sydney. 410 fathoms. Green mud.

Shell.—Thinnish, porcellanous, white, ribbed, banded, and tubercled; with a high spire, a blunt rounded apex, rounded whorls, and a contracted rounded base produced into

[1] καμπύλος, bent.

a very one-sided, narrow, sinistrally bent, and reverted snout. *Sculpture:* Longitudinals—there are on each whorl from 13 to 15 rather narrow ribs, which are feeble in the sutures and die out on the base; they are small, sharp, close-set, and regular on the first ordinary whorl; afterwards they become irregular and distant, and on the body somewhat obsolete; at every two-thirds of a whorl one of these ribs becomes prominent as a varix, with the old mouth-edge in front: the whole surface is roughened with rather harsh lines of growth. Spirals—there are several distant bands, sharpish on the upper whorls, broad and feebly raised on the last; these rise into low rounded tubercles in crossing the ribs; one of them has a slight tendency to form an angulated shoulder some way below the suture; they extend to the base, but pass over into threads on the snout: the whole surface is further scored by fine, close-set, rounded threads; these are fretted harshly, but the intervening furrows most delicately and sharply by the lines of growth. *Colour* porcellanous white below the pale-chestnut surface. *Epidermis* very pale chestnut, thin, somewhat persistent, most delicately hirsute, a minute bristle rising from each of the frettings or minute tubercles formed on the spiral threads by the crossing lines of growth. *Spire* high, narrow, conical. *Apex* globose, ending in a very small depressed tip; its 4 whorls are rounded, smooth, but finely scratched with about six distant spiral lines; they are obtusely but sharply angulated above, and are parted by a narrowly tabulated suture. *Whorls* 8½ in all, rounded, contracted above and below, rather obscurely angulated; the upper whorls are rather high and narrow, the penultimate shortish and broad, the last slightly tumid, with a rounded contracted base, produced into a very lop-sided, longish, narrow, conical, sinistrally bent and reverted snout. *Suture* impressed, irregular, horizontal between the upper whorls, but between the penultimate and the body-whorl very oblique. *Mouth* circularly oval, slightly pointed above and also below, where it runs out into the long, nearly closed, sinistrally bent canal. *Outer lip* semicircular in its curve, projecting thin and sharp in front of the labral varix, patulous except near the body, smooth within, but slightly furrowed by the external spiral sculpture; it is pinched-in at the top of the canal, down the side of which it runs in a pretty straight line. *Inner lip* semicircular, patulous, with a few obscure tubercles in front; it is continuous with the outer lip; its edge is slightly prominent on the body, markedly so on the pillar, with a furrow behind it, and an umbilical chink at the origin of the canal, where it is bent suddenly and broadly over to the right, so as nearly to cover the canal altogether. *Operculum* thin, horny, ovate, being rounded at the sides, a little narrow behind and subtruncate in front, where at the outer corner is the nucleus, forming the centre of the lines of growth, with which it is rather strongly scored. H. 1·67 in. B. 0·8. Penultimate whorl, height 0·32. Mouth, height 1 (exclusive of canal 0·6), breadth 0·45.

Operculum of *Nassaria campyla*.

In this species the change of direction in the suture gives the impression of a bend in the axis, and the twisted look of the shell is increased by the distortion of the snout.

The genus under which to class this form has been selected with much hesitation. *Tudicla* has

the snout sometimes distorted to the left, and has (*teste* Kobelt) an operculum with a terminal nucleus, but is characterised by a strong tooth on the pillar and a low spire. *Murex* seemed suggested by the peculiarity of shape, by the almost total absence of teeth on both lips, and by the length and straightness of the distorted snout, features more or less present in various species, but especially in *Murex* (*Haustellum*) *elegans*, Beck, *Murex* (*Haustellum*) *trilineatus*, Reeve. But in all the species of that group the distortion of the snout is, I think, to the right, instead of, as here, to the left. In the end I have followed the advice of Dr Kobelt, feeling his opinion confirmed by the form of the apex and by the texture of the shell, in both of which points it resembles *Nassaria*. I am not aware that any species of that genus has been described as having an epidermis; but, unless there be cases where it is certain that no epidermis exists, its existence may be taken for granted: its absence is often due to remorseless cleaning of specimens for the market. The operculum is somewhat unlike that of *Nassaria*, and combines the characters of *Purpura*, *Buccinum*, and *Typhis*, though here again ordinary representations are untrustworthy, especially in the case of species whose opercular nucleus is at or near the edge. In these cases the body of the animal gradually separates from the old part of the operculum, which is then apt to be abraded, and thus to present features strangely unlike those of specimens which are young, or which come from deep and quiet water.

Family Cassidæ, d'Orbigny, 1839.

Genera. 1. *Cassis*, Klein. 2. *Cassidaria*, Lam. 3. *Oniscia*, Sow.

1. *Cassis*, Klein, 1753.

Species.

1. *Cassis* (*Semicassis*) *pila*, Reeve. 2. *Cassis* (*Bezoardica*) *wyvillei*, n. sp.
3. *Cassis* (*Casmaria*) *turgida*, Reeve.

1. *Cassis* (*Semicassis*) *pila*, Reeve.

Martini, Conch. Cab., vol. ii. p. 10, vignette 18, figs. 1, 2.
Cassis pila, Reeve, Conch. Icon., vol. v. pl. ix. fig. 21.
„ „ Küster, Conch. Cab. (ed. Küster), p. 39, sp. 29, pl. li. figs. 9, 10.
„ „ Lischke, Jap. Meer. Conch., vol. i. p. 63, vol. ii. p. 56.
Semicassis pila, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 234.
Cassis pila, Dunker, Index Moll. Mar. Japon., p. 64.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, off south-west point of Papua. 28 fathoms. Green mud.

Station 203. October 31, 1874. Lat. 11° 6′ N., long. 123° 9′ E. Philippines. 12 to 20 fathoms. Mud.

Habitat.—China (British Museum); Torres Straits (Brazier); Japan and China (Lischke).

This is a somewhat variable species. Some of the specimens from Station 188 are peculiar.

2. *Cassis* (*Bezoardica*) *wyvillei*, n. sp. (Pl. XIV. fig. 13).

Station 204A. November 2, 1874. Lat. 12° 43′ S., long. 122° 9′ E. Philippines. 100 to 115 fathoms. Green mud.

Shell.—Large, globosely ovate, ventricose, thin, unvarixed, tubercled, almost smooth, with a smooth reverted outer lip, a twisted pillar, an almost wholly covered and shallow umbilicus, a raised spire, and an impressed suture; it is of a pale ruddy fawn colour, under a thin glue-like epidermis. *Sculpture:* Longitudinals—there are obsolete rounded lines of growth, with here and there, on the last whorl, a strong sharp scratch, but no approach to a varix anywhere; on the upper whorls there are distant rounded threads. Spirals—there are on the last whorl four remote rows of distant tubercles, on the two previous whorls only two rows are seen; the first row forms a prominent shoulder some way below the suture; its tubercles are large, rounded, and sharp, and are connected somewhat feebly by a small rounded thread; the second row lies immediately above the suture, and consists of much smaller, closer set, elongated, blunt, and scarcely raised tubercles; the third is about equally remote from the second, and the fourth from the third; in these the tubercles are increasingly feeble, and they can just barely be traced on the body near the mouth: on the last half of the body-whorl all these tubercles entirely disappear, only an exceedingly feeble keel about half-an-inch below the suture is for a little way recognisable; here the surface is almost quite smooth, with very obsolete remote threads, which become slightly more distinct on the base; on the earlier regular whorls these threads are sharp, and, decussated by the longitudinals, form a harsh reticulated surface; at the point of the base there is an open oblique furrow bordered in front by the reverted lip of the anterior sinus, and also by the sharp thread which is the old scar of the sinus-edge. *Colour:* there is a membranaceous, smooth, but not glossy epidermis, beneath which the shell is of a pale ruddy fawn colour. *Spire* rather high and subscalar. *Apex* small, prominent, almost sharp; it consists of 4 quite smooth, globose, rounded, small embryonic whorls. *Whorls:* besides those of the embryo there are nearly 7 regular whorls; they are of very regular increase, the last is somewhat ventricose, with a rounded and little produced base. *Suture* slightly impressed, scarcely oblique. *Mouth* rather large, elongately pear-shaped, white, faintly tinted in the throat. *Outer lip* smooth, white, flatly reverted; at its insertion it just includes the second row of tubercles; on the base it is patulous; the sinus in front of the pillar is open, oblique, not very large, and has a reverted edge. *Inner lip:* across the body spreads high and very wide a thin glaze thickened into a thin short bridge across the horizontal umbilicus, and then running straight down the pillar, which is twisted, has a very strong oblique fold in the middle, and below this 3 feeble folds which are quite external and short; lower still is the sharp, strong, very prominent and much twisted pillar-edge. H. 4 in. B. 2·6. Mouth, length 2·8, breadth 1·9.

I had intended to call this very fine species *Cassis thomsoni*, but that name has been preoccupied by Brazier for a species dredged by the Challenger five miles due east from Sydney Heads, in 45 fathoms. Mr Brazier, in the Proc. Linn. Soc. New South Wales, vol. i. p. 9, says—"This fine shell fell to my share the day that Captain Nares, his officers, and Professor C. Wyville Thomson, Director of the Civilian Scientific Staff of H.M.S. Challenger Exploring Expedition, entertained a party of Australian naturalists to a cruise outside Sydney Heads to see the deep-sea sounding and dredging carried out, and it is with pleasure that I name it after Professor C. W. Thomson."

I do not know the species thus named, only from Mr Brazier's description it is obviously not that which I have described, and for which I have selected a name recalling my lamented friend.

Cassis wyvillei is extremely like *Cassis coronadoi*, Crosse (Journ. de conch., vol. xv., 1867, p. 64, pl. iv. fig. 1, and pl. v. fig. 1), from Matanzas in Cuba, and now in M. Crosse's collection in Paris, where I had an opportunity of carefully comparing it with the Challenger species. Both are fresh, but dead shells. In shape, colour, and sculpture they have very much in common. *Cassis wyvillei* is a much smaller, narrower shell, with at least 1 to 1½ more whorls. *Cassis coronadoi* is a larger, stronger shell, coarser in sculpture, with a more depressed spire; its tubercles are in four rows, but only one row is visible on the upper whorls; they are much more distant, begin earlier, and at their beginning are more closely and regularly spaced; on the body-whorl there is a trace within the mouth and across the body of a fifth, but quite untubercled band; the smooth part of the whorl behind the outer lip is much shorter and much more roughly scored spirally than in *Cassis wyvillei*; on the interior surface, too, within the mouth, the depression of the tubercles is strongly marked, a feature which in this other is not visible; the general spirals, too, in *Cassis coronadoi* are very much fewer and stronger but less sharp, the swelling on the pillar is weaker, and the outer lip at its insertion above is markedly thrown forward, which is not at all the case in *Cassis wyvillei*. In *Cassis coronadoi* the colour is markedly different, being a rich dark chestnut.

If any one is satisfied with a mere comparison of figures, he may possibly enough fall into the snare of putting these species together, and, represented as they are by but one specimen each, get over the really great difficulty of locality by imagining error in this respect somewhere, but a comparison of the shells themselves will leave no doubt of the distinctness of the Philippine and West Indian species.

3. *Cassis* (*Casmaria*) *turgida*, Reeve.

Cassis turgida, Reeve, Conch. Icon., vol. v. pl. x. fig. 25.
„ „ Küster, Conch. Cab. (ed. Küster), p. 45, sp. 35, pl. liii. fig. 7.
„ „ Chenu, Manuel, vol. i. p. 207, fig. 1131.

March 7, 1875. Admiralty Islands, north-east of Papua. 16 to 25 fathoms.

Habitat.—Philippines (British Museum).

2. *Cassidaria*, Lamarck, 1812.

It is undeniable that for this genus Link has priority with his name *Galeodea*, published in 1807, but *Galeodes* had been already employed by Martini in 1771 for his group of *Semicassis*, in which he included *Cassidaria echinophora*, Linne, the type of Link's genus. The same name, too, was used by

Olivier in 1791 for a genus of the Arachnida, and by Bolten in 1798 for a group of *Pyrula* and *Purpura*. Link's name cannot therefore be maintained.

Montfort then, in 1810, has priority with his name *Morio*, but Latreille used that name in the same year, and, as I believe, with acceptance, for a group of Coleoptera.

It is thus satisfactory to have so good a reason for retaining the very generally received name proposed by Lamarck, a name which has the further advantage of suggesting its own place in classification.

Cassidaria (Sconsia) striata, Lamarck.

Cassidaria striata, Lamarck, Anim. s. vert., vol. vii. p. 216, and (ed. Desh.) vol. x. p. 10, sp. 4.
" " Kiener, Iconog., p. 6, sp. 3, pl. ii. fig. 3.
" " Deshayes, Encycl. méthod., vers, vol. ii. p. 208, sp. 1, pl. cccev. fig. 2.
" " Reeve, Conch. Icon., vol. v. pl. i. fig. 3 (not 2).
" " Küster, Conch. Cab. (ed. Küster), Cassis, &c., p. 52, pl. lv. figs. 1, 2.
" " Chenu, Manuel, vol. i. p. 208, fig. 1138.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Habitat.—Unknown.

3. *Oniscia*, Sowerby,[1] 1825.

Oniscia cithara, Watson (Pl. XXXIV. fig. 6).

Oniscia cithara, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 266.

Station 192. September 26, 1874. Lat. 5° 49′ 15″ S., long. 132° 14′ 15″ E. Ki Islands, west of Papua. 140 fathoms. Blue mud.

Shell.—Harp-shaped, being narrow below and broadish above; it has a somewhat raised and sharp-pointed apex, and is scored by many mucronated ribs and broad low spirals. *Sculpture:* Longitudinals—on the last whorl (but the shell is not quite adult) are 17 rather low, flexuous, narrowish, rounded ribs which are slightly crested on their front side; they are a little concave above, almost straight or very faintly convex for the most of their course, and retreat rather strongly so as to become horizontal as they die out on the pillar; they are parted by shallow flat furrows of unequal breadth, but greater than that of the ribs; over the whole surface, but especially in the furrows, are sharp puckerings with finer folds between, and close-set, sharp, almost microscopic striæ in the lines of growth; on the upper whorls the ribs are fewer and sharper. Spirals—on the last whorl there are 13 broad, low, squarish, raised bands, which are narrower and sharper on the snout: the first is at the suture; the second, a little remote, is narrower, but sharper than the rest; this and the third rise on the longitudinal ribs to high, narrow, sharp spikes

[1] I do not feel called on to disturb this well-known name in favour either of *Lambidium*, Link, 1807, or of *Morum*, Bolten, 1798.

which are parallel to the axis of the shell; the lower row of these is the larger, and they give the appearance of a shoulder: the spirals are most squarely prominent on the ribs, but are faintly continuous in the intervals; they are parted by square furrows of the same breadth as themselves; the surface of the shell is also finely scratched: below the spiral bands is a broad low swelling which curves round the pillar; it indicates the old canal, the former concave lines of whose edge form strong scores across it. *Colour* pale buff, with faint chestnut mottlings, which are concentrated and darkened in two distinct deep-purple bands in the middle of the last whorl, with fainter traces of two more below and another above near the suture; all these are vague in their limits. *Spire* raised, conical, scalar. *Apex* small, consisting of $3\frac{1}{4}$ embryonic whorls, which are polished, turbinated, and end in a fine, round, raised point; they are slightly iridescent; where they join the normal whorls there is indication of that thickening of the lip which is common in the embryonic shell of *Cassis*. *Whorls* (on the not quite adult specimen) 8, exclusive of the embryonic whorl; they rise high and constrictedly on each previous whorl, of which they leave but little uncovered; they are of very slow increase, the last is very little tumid, and that almost entirely above, its greatest breadth being at the third spiral; still they are convex throughout till near the point of the base, when the contour-line is slightly hollowed in passing over to the prominent but not lengthened nor narrow snout. *Suture* is a fine, angularly impressed, irregular line, much disturbed by the buttress-like ribs. *Mouth* long and narrow (but immature), pure porcellanous white within, but stained with the purple bands. *Outer lip* leaves the body at a right angle, but turns almost immediately to run parallel to the axis, thus forming a short narrow canal; from this point it curves equably to the point of the shell, which is obliquely cut off upwards, forming a broad open canal. *Inner lip* spreads a little on the body in a porcellanous glaze, narrowing to a sharp point in front; its direction is almost straight in an oblique direction to the extreme point, being only slightly concave in the middle. H. 1·6 in. B. 0·9. Penultimate whorl, height 0·14. Mouth, height 1·37, breadth 0·32.

In form and colour this is very like *Oniscia cancellata*, Sow.; but in sculpture it is different, having the longitudinals much more numerous and the spirals much less sharp, especially less projecting at their intersection with the longitudinals; the spire is much lower, the edge of the last whorl projects much less sharply, and the spiral at the shoulder does not project nearly so much as the first spiral below this point. In the upper whorls there is not the sharp reticulation which is found in *Oniscia cancellata*, from the intersection of the spirals by the sharp longitudinals. In that species, too, the embryonic apex is quite different, being a coarse flattened somewhat shapeless and much larger bulb, and having at the outside only $1\frac{3}{4}$ whorls.

Oniscia grandis, A. Ad., is much rougher, the spirals are more numerous and higher, the spikes on the spire are not so strong, nor do they run parallel to the axis, and the apex has fewer whorls. *Oniscia denisoni*, Reeve, has all the spirals mucronated at their intersection with the longitudinals.

Family Doliidæ, Adams, 1858.

Genera. 1. *Dolium*, Humphreys. 2. *Oocorys*, Fischer.

1. *Dolium*, Humphreys, 1797.

Dolium perdix (Linne).

Buccinum perdix, Linne (ed. 12) p. 1197, No. 440.
Le Tésan, Adanson, Sénégal, p. 107, pl. vii. fig. 5.
Dolium perdix, Martini, Conch. Cab., vol. iii. p. 403, pl. cxvii. figs. 1078, 1079 (1080?).
Buccinum perdix, Bruguière, Encycl. méthod., vers, vol. i. p. 245, sp. 3.
„ „ Dillwyn, Cat., vol. ii. p. 583, sp. 3.
„ „ Wood, Ind. Test., p. 110, pl. xxii. fig. 3.
Dolium perdix, Lamarck, Anim. s. vert., vol. vii. p. 261, and (ed. Desh.) vol. x. p. 144, sp. 7.
Buccinum perdix, Hanley, Ipsa Linn. Conch., pp. 240, 510 (*Dolium*).
Dolium perdix, Kiener, Iconog., p. 4, sp. 1, pl. v. fig. 9.
„ „ Quoy and Gaimard, "Astrolabe," Zool., vol. ii. p. 598, pl. xli. figs. 1–8.
„ „ Reeve, Conch. Icon., vol. v. pl. vi. fig. 9.
„ „ Küster, Conch. Cab. (ed. Küster), p. 69, pl. lxi. fig. 2.
„ „ d'Orbigny, Moll. rec. aux îles Canaries, par MM. Webb and Berthelot, p. 89, No. 132.
„ „ d'Orbigny, Moll. de Cuba, vol. ii. p. 182, No. 388.
„ „ v. Martens, Moll. Insel. Mauritius, &c., p. 264.

March (?) 1875. Wild Island, Admiralty Islands. Shore.

Habitat.—From the West Indies to the Indian Ocean and Polynesia (v. Martens).

D'Orbigny (Moll. de Cuba, *loc. cit.*) says expressly that this species is found at the Canaries, and in his Moll. rec. aux îles Canaries, par MM. Webb and Berthelot (*loc. cit.*) he gives it as one of their shells, adding that it is "assez rare." The shell sent by Mr Webb from the Canaries, and marked as this species by the Rev. R. T. Lowe (from whom d'Orbigny accepted several of the names of Canarian species) came into my possession on Mr Lowe's death, and proved on examination to be *Cassis sulcosa*, Born. But d'Orbigny's own (Canarian) specimen in the British Museum, which Mr Edgar Smith kindly examined for me, is really this species. M'Andrew, in his Geog. Distrib. of N. Atlantic Moll., mentions his having dredged fragments of *Dolium perdix* at the Canaries from 0 to 60 fathoms, but in his own list in the Cambridge Museum he has corrected this name to *Dolium galea*.

2. *Oocorys*, Fischer, 1883.

Oocorys sulcata, Fischer (Pl. XVII. fig. 11).

Oocorys sulcata, Fischer, Journ. de conch., Paris, 1883, p. 392, No. 3.
„ „ Fischer, Manuel de Conchyliologie, livraison 8, p. 769.
(?) *Benthodolium abyssorum*, Verrill and Smith, Moll. New England Coast, Trans. Connecticut Acad., vol. vi. pt. 1, 1884, p. 177, pl. xxxi. fig. 12.

Station 106. August 25, 1873. Lat. 1° 47′ N., long. 24° 26′ W. Mid-Atlantic. 1850 fathoms. Globigerina ooze. Bottom temperature 36°·6.

Habitat.—Off the coast of the Sahara, Senegal, and the Azores from 680 to 1980 fathoms (Fischer); off the New England coast in 1395 to 2221 fathoms (Verrill).

Dr Fischer considers the Challenger shell (of which there is but one specimen) a distinct species from his *Oocorys sulcata*, but after careful study of his type-specimen I found myself quite unable to separate them. His specimen is larger and has coarser and less sharp sculpture on the last whorl, but these differences I attribute to greater age and less perfect preservation. The Challenger specimen has the spire a little higher, but that is partly a deception of the eye due to the shell being smaller and narrower, and is partly due to the rubbed condition of the apex in Dr Fischer's specimen. The careful measurement of corresponding parts gives identical results.

I have quoted Professor Verrill's *Benthodolium abyssorum* with a query because I have not seen his species, and though his description and figure agree on the whole very well with Dr Fischer's species, there still are some difficulties. Thus, Professor Verrill's shell seems to be as much larger than Dr Fischer's as that exceeds the Challenger specimen, and yet at the same time the New England form is said to have but 5 whorls, while Dr Fischer's species has $6\frac{1}{2}$ and the Challenger shell has $5\frac{1}{2}$; but where the apex of specimens is eroded, as is the case in Dr Fischer's and the Challenger shells, and most probably too in Professor Verrill's, an element of the greatest uncertainty is at once introduced into the reckoning of the whorls, every one allowing for the absent whorls according to his own fancy. That uncertainty is the greater as regards *Oocorys* since the form of its embryonic apex is, I believe, unknown. If, then, that apex is exceptionally small, as it is in the closely allied forms of *Dolium* and *Cassis*, a frayed top will seem to present almost the entire tip when not less than two or three whorls are actually absent.

There is a feature I noticed in the Challenger shell and also in Dr Fischer's specimen which seems worthy of remark because it has not been referred to in either of the descriptions quoted above, but has important bearings on the relation of the genus to *Cassis*, and especially to *Dolium*; and that is, that there are on the outer edge of the inner lip feeble but unmistakable traces of broad, flat, fold-like teeth which answer to, but are only remotely connected with, the spiral threads and furrows of the exterior.

The radula of this genus, according to Professor Verrill, somewhat resembles that of *Dolium*, but his description and figure (see fig. 12b) approach more nearly to that of *Cassis*.

Family APORRHAIDÆ, Gray, 1847.

Genera. 1. *Aporrhais*, Da Costa. 2. *Struthiolaria*, Lam.

1. *Aporrhais*, Da Costa, 1776.

Aporrhais cancellata (Lamarck).

Strombus cancellatus, Lamarck, Anim. s. vert., vol. vii. p. 212, and (ed. Desh.) vol. ix. p. 710, sp. 32.
„ „ Wood, Ind. Test., p. 215, Suppl. pl. iv. fig. 6.
„ „ Deshayes, Encycl. méthod., vers, vol. iii. p. 995, sp. 21.
„ *fissurella* (not of Linne), Sowerby, Genera, vol. ii. pl. ccxxxi. fig. 7.
„ „ Sowerby, Thes. Conch., vol. i. pt. 1, p. 26, pl. viii. figs. 64, 65.
Rostellaria cancellata, Kiener, Iconog., p. 9, sp. 5, pl. iii. fig. 3.
Strombus cancellatus, Küster, Conch. Cab. (ed. Küster), p. 73, sp. 53, pl. xx. fig. 5.
Rostellaria cancellata, Reeve, Conch. Icon., vol. vi. pl. iii. fig. 10.

October 6, 1874. Amboina. 15 to 25 fathoms.

Habitat.—Amboina (British Museum); Indian Ocean (Geneva Museum, Delessert Collection).

It is not at all uncommon to find this species in museums represented by specimens which have been so madly cleaned as to have lost entirely the reverted canal which is characteristic of the species.

2. *Struthiolaria*, Lamarck, 1812.

Species.

1. *Struthiolaria mirabilis*, E. A. Smith. 2. *Struthiolaria scutulata*, Martyn.

1. *Struthiolaria mirabilis*, E. A. Smith.

Struthiolaria mirabilis, E. A. Smith, Ann. and Mag., July 1, 1875, p. 67.
" " E. A. Smith, Phil. Trans., 1877 (separate impression, p. 4), vol. ix. p. 3.
" " Kobelt, Jahrb. deutsch. malak. Gesellsch., 1878, p. 240, sp. 5.
" " Studer, Fauna Kerguelenland Archiv. Naturg., 1879, p. 129, No. 28.

Station 149B. January 17, 1874. Lat. 49° 28′ S., long. 70° 30′ E. Off Royal Sound, Kerguelen. 25 fathoms. Volcanic mud.

Station 149C. January 19, 1874. Lat. 49° 32′ S., long. 70° E. Balfour Bay, Royal Sound. 20 to 60 fathoms. Volcanic mud.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound. 28 fathoms. Volcanic mud.

Station 151. February 7, 1874. Lat. 52° 59′ 30″ S., long. 73° 33′ 30″ E. Heard Island, SSE. from Kerguelen. 75 fathoms. Volcanic mud.

Habitat.—Swains Bay, Kerguelen, 3 to 7 fathoms (Smith); north of Kerguelen, 60 fathoms (Studer).

2. *Struthiolaria scutulata* (Martyn).

Buccinum scutulatum, Martyn, Univ. Conch., vol. ii. pl. lv., and (ed. Chenu) pl. xviii. fig. 1.
" *compositum*, Chemnitz, Conch. Cab., vol. x. pp. 176, 179, vignette 21, figs. C. and D.
" *scutulatum*, Dillwyn, vol. ii. p. 622, sp. 80.
" " Wood, Ind. Test., p. 116, pl. xxv. fig. 81.
Struthiolaria oblita, Sowerby, Thesaurus, vol. i. pt. 1, p. 24, pl. v. figs. 14, 15.
" *scutulata*, Lamarck (ed. Desh.), vol. ix. p. 536, sp. 4.
" " Reeve, Conch. Icon., vol. vi. pl. i. fig. 2.
Pelicaria scutulata, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 208, No. 132.
Struthiolaria scutulata, Hutton, Marine Moll. New Zealand, p. 24, No. 87.
" " v. Martens, Crit. List New Zealand Moll., p. 26.
" " Kobelt, Jahrb. deutsch. Malak. Gesellsch., 1878, p. 240, sp. 2.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

April 23, 1874. Port Jackson, Sydney. 6 to 15 fathoms.

Habitat.—New Zealand (v. Martens); Port Jackson (Angas).

Why Professor Hutton passes over this species in his Manual of New Zealand Mollusca without any mention whatever does not appear. Both he in his earlier work, and v. Martens in his admirable Critical List (for both see above), had quoted it as a New Zealand species. Its absence from the latter and more complete work seems to imply doubt of its belonging to New Zealand at all.

Family ALATA, Lamarck, 1809.

Genera. 1. *Strombus*, Linne. 2. *Terebellum*, Klein.

1. *Strombus*, Linne, 1758.

Species.

1. *Strombus lentiginosus*, Linne.
2. *Strombus pugilis*, Linne.
3. *Strombus* (*Canarium*) *gibberulus*, Linne.
4. *Strombus* (*Canarium*) *muricatus*, Martini.
5. *Strombus* (*Canarium*) *rugosus*, Sow.
6. *Strombus* (*Canarium*) *rupellii*, Reeve.
7. *Strombus* (*Gallinula*) *campbellii*, Gray.
8. *Strombus* (*Gallinula*) *canarium*, Linne.
9. *Strombus* (*Gallinula*) *columba*, Lam.
10. *Strombus* (*Gallinula*) *succinctus*, Linne.
11. *Strombus* (*Gallinula*) *variabilis*, Swains.
12. *Strombus* (*Gallinula*) *vittatus*, Linne.

1. *Strombus lentiginosus*, Linne.

Strombus lentiginosus, Linne, Syst. Nat. (ed. 12), p. 1208, No. 495.
Martini, Conch. Cab., vol. iii. p. 118, pl. lxxx. figs. 825, 826, and pl. lxxxi. figs. 827, 828.
" " Dillwyn, Cat., vol. ii. p. 660, sp. 10.
" " Wood, Ind. Test., p. 123, pl. xxiv. fig. 10.
" " Lamarck, Anim. s. vert., vol. vii. p. 203, and (ed. Desh.) vol. ix. p. 693, sp. 10.
" " Deshayes, Encycl. méthod., vers, vol. iii. p. 989, sp. 7.
" " Sowerby, Thes. Conch., vol. i. pt. 1, p. 37, sp. 56, pl. viii. fig. 79.
" " Kiener, Iconog., p. 25, sp. 18, pl. xviii. fig. 1.
" " Quoy and Gaimard, "Astrolabe," Zool., vol. iii. p. 65, pl. l. figs. 3–5.
" " Reeve, Conch. Icon., vol. vi. pl. xiii. fig. 31.
" " Hanley, Ipsa Linn. Conch., pp. 268, 516.
" " Deshayes, Moll. Réunion, p. 113, No. 372.
" " v. Martens, Moll. Mauritius, &c., p. 277.

December 1873. Simons Bay, Cape of Good Hope.

Habitat.—From the east coast of Africa throughout the Indian Ocean to Australia (v. Martens).

The solitary specimen is far from full-grown, but is pretty certainly this species.

2. *Strombus pugilis*, Linne.

Strombus pugilis, Linne, Syst. Nat., p. 1209, No. 498.
" " Dillwyn, Cat., vol. ii. p. 664, sp. 17 (excl. var.)
" " Wood, Ind. Test., p. 123, pl. xxv. fig. 17.
" " Lamarck, Anim. s. vert., vol. vii. p. 204, and (ed. Desh.) vol. ix. p. 696, sp. 12.
" " Deshayes, Encycl. méthod., vers, vol. iii. p. 996, sp. 22, pl. cccevüi. fig. 4.[1]
" " Sowerby, Genera, vol. ii. pl. 230, figs. 1, 2.
" " Sowerby, Thes. Conch., vol. i. pt. 1, p. 32, sp. 33, pl. viii. fig. 74.
" " Kiener, Iconog., p. 30, sp. 22, pl. xx. fig. 1.
" " Küster, Conch. Cab. (ed. Küster), p. 32, pl. iv. figs. 4, 5, and pl. xii. fig. 9.
" " Reeve, Conch. Icon., vol. vi. pl. xvi. fig. 39.
" " Hanley, Ipsa Linn. Conch., pp. 269, 516.
" " Fischer, Coquilles Guadaloupe, Revue coloniale, 1857, p. 7, sp. 6.
" " Tristram, Bermudan Moll., Proc. Zool. Soc. Lond., 1861, p. 404.

Station 122 to 122c. September 10, 1873. Lat. 9° 5′ S. to 9° 10′ S., long. 34° 49′ W. to 34° 53′ W. Off Pernambuco. 350 fathoms to 400 fathoms. Red mud.

Habitat.—West Indies (Fischer); Bermuda (Tristram); Gulf of Mexico and Brazil (Berne Museum).

3. *Strombus* (*Canarium*) *gibberulus*, Linne.

Strombus gibberulus, Linne, Syst. Nat., p. 1210, No. 501.
Martini, Conch. Cab., vol. iii. p. 93, pl. lxxvii. figs. 792–798.
" " Dillwyn, Cat., vol. ii. p. 666, sp. 20.
" " Wood, Ind. Test., p. 123, pl. xxv. fig. 20.
" " Lamarck, Anim. s. vert., vol. vii. p. 205, and (ed. Desh.) vol. ix. p. 697, sp. 14.
" " Deshayes, Encycl. méthod., vers, vol. iii. p. 997, sp. 23, pl. cccevüi. fig. 3 (figure drawn reversed, and in the list of plates called *Strombus succinctus*).
" " Sowerby, Thes. Conch., vol. i. pt. 1, p. 31, pl. vi. figs. 18, 19, 24–26.
" " Kiener, Iconog., p. 37, sp. 28, pl. xxviii. fig. 1, and pl. xxxiii. fig. 5.
" " Quoy and Gaimard, "Astrolabe," Zool., vol. iii. p. 66, pl. l. fig. 14.
" " Reeve, Conch. Icon., vol. vi. pl. viii. fig. 15.
" " Küster, Conch. Cab. (ed. Küster), p. 48, sp. 32, pl. viii. figs. 3–9, 11.
" " Hanley, Ipsa Linn. Conch., pp. 270 and 517.
" " Issel, Moll. Mar Rosso, p. 131.
" " Deshayes, Conch. Réunion, p. 114, No. 376.
" " v. Martens, Moll. Mauritius, &c., p. 278.

July 21, 1874. Reefs off Tongatabu.
July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—East Indies and Moluccas (Deshayes); Society Islands (Reeve); Mauritius, Moluccas, Philippines (British Museum); the Indian Ocean, from South Africa and the Red Sea to the Malay Archipelago and Polynesia (v. Martens).

[1] This, in common with all the figures on this and the following plate of the Encyclopédie, is drawn reversed.

4. *Strombus* (*Canarium*) *muricatus*, Martini.

Canarium muricatum, Martini, Conch. Cab., vol. iii. (1777), pp. 85, 98, 165, pl. lxxviii. figs. 803–806.
Strombus urceus (Born, not of Linne), Wood, Ind. Test., p. 124, pl. xxv. fig. 32.
„ „ (not of Linne), Lamarck, Anim. s. vert., vol. vii. p. 210, and (ed. Desh.) vol. ix. p. 705, sp. 25.
„ „ (not of Linne), Deshayes, Encycl. méthod., vers, vol. iii. p. 993, sp. 15.
„ „ (not of Linne), Sowerby, Thes. Conch., vol. i. pt. 1, p. 30, sp. 21, pl. vii. figs. 34–36 (but not 37, 41, 42).
„ „ (not of Linne), Kiener, Iconog., p. 60, sp. 46, pl. xv. fig. 2, pl. xxx. figs. 2, 3.
„ „ (not of Linne), Reeve, Conch. Icon., vol. vi. pl. xi. fig. 24.
„ „ (not of Linne), Küster, Conch. Cab. (ed. Küster), p. 51, sp. 34, pl. ix. figs. 4–6 (not 7) pl. xiv. fig. 9.
„ „ (not of Linne), Lischke, Japon. Meer. Conch., vol. i. p. 30, vol. ii. p. 23.
„ „ (not of Linne), Issel, Mal. Mar Rosso, p. 132.
„ „ (not of Linne), v. Martens, Moll. Mauritius, &c., p. 277.

September 8, 1874. Cape York, off Albany Island, Torres Strait. 3 to 12 fathoms.

Habitat.—The Indian Ocean, from the east coast of Africa and the Red Sea to the Malay Archipelago (v. Martens); the Philippines (British Museum); China and Japan (Lischke).

This species, as Mr Hanley has pointed out (Wood, Ind. Test., *Strombus urceus*, p. 124, sp. 32, *Strombus floridus*, Lam., p. 215, sp. 5, and also Ipsa Linn. Conch., p. 275), is *Strombus urceus, auctorum nec Linnei*. The mistake began early, and has continued persistently. The disturbance of a long-established identification is much to be regretted, as Mr Hanley has truly said; but the transference of Linne's name from this species to the species to which he really applied it is inevitable when a witness so capable as Mr Hanley assures us that this species we have before us now is not to be found in Linne's collection, and that the shell preserved in Linne's cabinet, and marked by him as *Strombus urceus*, is not the *Strombus urceus* auctorum, but the *Strombus mutabilis*, Swainson, the *Strombus floridus*, Lam. In selecting a name for this now nameless species, I have taken that of Martini as the earliest I could find. Of course, the later application by Schröter of this same name to the *Cerithium uncinatum*, Gm., is absolutely without importance here. After Martini, Schumacher would probably claim acceptance for his name of *Strombus ustulatus*. Dunker (Index Moll. Mar. Japon., p. 95) has not been quoted above, because his references seem to embrace both our present species and *Strombus floridus*, Lam.

5. *Strombus* (*Canarium*) *rugosus*, Sowerby.

Strombus rugosus, Sowerby, Tankerville Cat., App. p. xx. No. 1791.
„ *jugosus*, Wood, Ind. Test., p. 215, Suppl. pl. iv. fig. 4.
„ *rugosus*, Reeve, Conch. Icon., vol. vi. pl. ix. fig. 16.
„ „ Sowerby, Thes. Conch., vol. i. pt. 1, p. 30, sp. 23, pl. vii. figs. 58, 60.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—East Indies (Sowerby); Korea (Reeve, *auc.* Belcher); Philippines (British Museum).

6. *Strombus* (*Canarium*) *rupellii*, Reeve.

Strombus rupellii, Reeve, Conch. Icon., vol. vi. pl. viii. fig. 13.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Red Sea (Reeve).

Professor v. Martens (Moll. Mauritius, p. 278) quotes this species from the Indian Ocean, &c., as *Strombus elegans*, Sowerby (Thes., pl. vii. fig. 43), and holds it as a "var. of *Strombus urceus*" (*auctorum nec*) "Linne." I may be allowed to suggest that in forming this estimate he has not had before him well-identified specimens. The three species are constantly mixed up in museums, but Reeve's species is, I think, really distinct.

7. *Strombus* (*Gallinula*) *campbellii*, Gray.

Strombus vittatus (not of Linne), Chemnitz, Conch. Cab., vol. x. p. 217, pl. clvii. fig. 1496.
" *campbellii*, Gray, Griffith's Animal Kingdom Mollusca, pp. 82, 600, pl. xxv. fig. 6.
" " Sowerby, Thes. Conch., vol. i. pt. 1, p. 26, sp. 3, pl. vi. figs. 22, 23.
" " Lamarck, Anim. s. vert. (ed. Desh.), vol. ix. p. 715, sp. 39.
" " Kiener, Iconog., p. 55, sp. 42, pl. xxiv. fig. 2.
" " Reeve, Conch. Icon., vol. vi. pl. xvii. fig. 45.
" " Küster, Conch. Cab. (ed. Küster), p. 68, sp. 48, pl. xv. fig. 2.
Gallinula campbellii, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 292, No. 48.
Strombus campbellii, E. A. Smith, "Alert" Collections, p. 58, No. 52.

September 8, 1874. Flinders Passage, Cape York, North-east Australia. 7 fathoms.
September 8, 1874. Albany Island, Cape York. 3 to 12 fathoms.
Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Near Cape York. 6 fathoms. Coral mud.

Habitat.—North-east Australia, 0 to 15 fathoms (Brazier).

8. *Strombus* (*Gallinula*) *canarium*, Linne.

Strombus canarium, Linne, Syst. Nat. (ed. 12), p. 1211, No. 507.
Martini, Conch. Cab., vol. iii. p. 107, pl. lxxix. fig. 818 (*nec* 817).
" " Dillwyn, Cat., vol. ii. p. 670, No. 27 (excl. var.)
" " Wood, Ind. Test., p. 124, pl. xxv. fig. 27.
" " Deshayes, Encycl. méthod., vers, vol. iii. p. 990, sp. 9.
" *vanikorensis*, Quoy and Gaimard, "Astrolabe," vol. iii. pl. li. figs. 7–11.
" " Lamarck, Anim. s. vert., vol. vii. p. 206, and (ed. Desh.) vol. ix. p. 699, sp. 17.
" " Sowerby, Thes. Conch., vol. i. pt. 1, p. 33, sp. 36, pl. viii. figs. 69, 70.
" " Kiener, Iconog., p. 33, sp. 25, pl. xxix. figs. 1, 2.
" " Küster, Conch. Cab. (ed. Küster), p. 43, sp. 28, pl. vii. fig. 4.
" " Reeve, Conch. Icon., vol. vi. pl. xviii. fig. 46.
" " Hanley, Ipsa Linn. Conch., pp. 273, 508.
Gallinula canarium, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 292, No. 45.

September 8, 1874. Albany Island, Cape York, Torres Strait. 3 to 12 fathoms.

Habitat.—Ceylon and Moluccas (British Museum); Java and Amboina (Küster); New Guinea (Brazier).

9. *Strombus (Gallinula) columba*, Lamarck.

Strombus columba, Lamarck, Anim. s. vert., vol. vii. p. 208, and (ed. Desh.) vol. ix. p. 702, sp. 21.
" " Sowerby, Thes. Conch., vol. i. pt. 1, p. 27, sp. 6, pl. vi. figs. 2, 3, 6, 7.
" " Kiener, Iconog., p. 51, sp. 39, pl. xxv. fig. 1.
" " Küster, Conch. Cab. (ed. Küster), p. 67, sp. 47, pl. xv. figs. 1, 3.
" " Reeve, Conch. Icon., vol. vi. pl. xii. fig. 26.
" " Issel, Mal. Mar Rosso, p. 130, No. 268.
Gallinula columba, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 292, No. 47.
Strombus columba, v. Martens, Moll. Mauritius, &c., p. 278.

Station 208. January 17, 1875. Lat. 11° 37′ N., long. 123° 31′ E. Philippines. 18 fathoms. Blue mud.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Malanipa, Philippines. 10 to 20 fathoms. Sand.

Habitat.—India? and the Philippines (Sowerby); Zanzibar (British Museum and Reeve); Torres Strait, 15 fathoms (Brazier); Red Sea (Issel), and Seychelles (v. Martens).

10. *Strombus (Gallinula) succinctus*, Linne.

Strombus succinctus, Linne, (ed. 12), p. 1212, No. 509.
" *accinctus*, Born, Test. Mus. Cæs, p. 283, pl. x. figs. 14, 15.
Martini, Conch. Cab., vol. iii. pp. 104, 166, pl. lxxix. fig. 815, pl. lxxxix. fig. 871, and pl. xci. fig. 891.
" " Dillwyn, Cat., vol. ii. p. 672, sp. 30 (in part).
" *succinctus*, Wood, Ind. Test., p. 124, pl. xxv. fig. 30.
" " Lamarck, Anim. s. vert., vol. vii. p. 208, and (ed. Desh.) vol. ix. p. 703, sp. 22.
" " Deshayes, Encycl. méthod., vers, vol. iii. p. 992, sp. 12.
" " Sowerby, Thes. Conch., vol. i. pt. 1, p. 28, sp. 13, pl. vi. figs. 20, 21.
" " Küster, Conch. Cab. (ed. Küster), p. 39, sp. 25, pl. vii. fig. 1.
" " Kiener, Iconog., p. 45, sp. 35, pl. x. fig. 2.
" " Reeve, Conch. Icon., vol. vi. pl. xvii. fig. 43.
" " Hanley, Ipsa Linn. Conch., pp. 274, 518.

October 6, 1874. Amboina. 15 to 25 fathoms.

Habitat.—East Indies (Sowerby); Philippines, Masbati (Reeve); and Java, Moluccas (Berne Museum, Collection Shuttleworth).

11. *Strombus* (*Gallinula*) *variabilis*, Swainson.

Strombus variabilis, Swainson, Zool. Illustr., ser. 1, vol. i. pl. x.
„ „ Kiener, Iconog., p. 49, sp. 38, pl. xxi. fig. 2.
„ „ Sowerby, Genera, vol. ii. pl. ccxxxi. fig. 5.
„ „ Sowerby, Thes. Conch., vol. i. pt. 1, p. 27, sp. 9, pl. vi. figs. 9, 13, 14.
„ „ Reeve, Conch. Icon., vol. vi. pl. x. fig. 21.
„ „ Wood (ed. Hanley), p. 214, suppl. pl. iv. fig. 2.
„ „ Küster, Conch. Cab. (ed. Küster), p. 37, sp. 22, pl. iv.a. figs. 1, 2.
Gallinula variabilis, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 292, No. 46.

March 7, 1875. Admiralty Islands, north-east of Papua. 16 to 25 fathoms.

Habitat.—North Australia.

12. *Strombus* (*Gallinula*) *vittatus*, Linne.

Strombus vittatus, Linne, Syst. Nat. (ed. 12), p. 1211, No. 508.
Martini, Conch. Cab., vol. iii. p. 109, pl. lxxix. figs. 819, 820, 822, 823.
„ „ Chemnitz, Conch. Cab., vol. x. p. 208, pl. clv. figs. 1481, 1482.
„ „ Dillwyn, Cat., vol. ii. p. 671, sp. 28.
„ „ Wood, Ind. Test., p. 124, pl. xxiv. fig. 28 (?).
„ „ Lamarck, Anim. s. vert., vol. vii. p. 207, and (ed. Desh.) vol. ix. p. 701, sp. 19.
„ *turritus*, Lamarck, Anim. s. vert., vol. vii. p. 212, and (ed. Desh., see his note) vol. ix. p. 709, sp. 31.
„ *vittatus*, Deshayes, Encycl. méthod., vers, vol. iii. p. 991, sp. 10, pl. cccix. fig. 1 (reversed).
„ „ Sowerby, Thes. Conch., vol. i. pt. 1, p. 26, sp. 4, pl. vi. figs. 27–31.
„ „ Kiener, Iconog., p. 40, sp. 31, pl. xxiii. fig. 1, and (*Strombus turritus*) p. 42, sp. 32, pl. xxiv. fig. 1.
„ „ Küster, Conch. Cab. (ed. Küster), p. 44, sp. 29, pl. vii. figs. 5, 6, 8, 9, and (*Strombus turritus*) p. 55, sp. 37, pl. x. figs. 3, 4.
„ „ Reeve, Conch. Icon., vol. vi. pl. xvii. fig. 44.
„ „ Hanley, Ipsa Linn. Conch., pp. 273, 518.
Gallinula vittata, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 293, No. 49.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Station 203. October 31, 1874. Lat. 11° 6′ N., long. 123° 9′ E. Philippines. 20 fathoms. Mud.

Habitat.—East Indies (Sowerby); Philippines (Reeve and British Museum), also Moluccas (Berne Museum, Collection Shuttleworth); North-east Australia, 15 fathoms (Brazier).

I have marked the reference to Wood (*loc. cit. supra*) with a query. Mr Hanley, in his edition of the Index, accepts Wood's identification of the species, and I daresay he knows best, but I should have thought that Wood's figure characteristically represented *Strombus campbellii*, Gray.

2. *Terebellum*, Klein, 1753.

Terebellum punctatum, Chemnitz.

Bulla terebellum, Linne, Syst. Nat. (ed. 12), p. 1185, No. 388.
Avena marina, Martini, Conch. Cab., vol. ii. pp. 149, 190, pl. li. figs. 568, 569.
Terebellum punctatum, Chemnitz, Conch. Cab., vol. x. p. 124, pl. cxlvi. figs. 1362, 1363.
Bulla terebellum, Dillwyn, Cat., vol. i. p. 489, sp. 41.
" " Wood, Ind. Test., p. 94, pl. xviii. fig. 41.
Terebellum subulatum, Lamarck, Anim. s. vert., vol. vii. p. 410; and (ed. Desh.) vol. x. p. 584, sp. 1.
" " Deshayes, Encycl. méthod., vers, vol. iii. p. 1004, pl. cccix. fig. 1.
" " Sowerby, Genera, vol. ii. pl. cclxiii. figs. 1, 2.
" " Kiener, Iconog., p. 2, pl. i. fig. 1.
" " Adams and Reeve, "Samarang," p. 36, pl. ix. fig. 6.
" " Sowerby, Thes. Conch., vol. iii. pt. 19, p. 82, pl. ccxviii. figs. 1–5.
" *punctatum*, Reeve, Conch. Icon., vol. xiv. plate, fig. 1.
Bulla terebellum, Hanley, Ipsa Linn. Conch., pp. 209, 503.
Terebellum subulatum, v. Martens, Moll. Mauritius, &c., p. 279.

Station 172A. July 23, 1874. Inside the reefs, Tongatabu. 18 fathoms. Coral mud.
Station 208. January 17, 1875. Lat. 11° 37′ N., long. 123° 31′ E. Philippine Islands. 18 fathoms. Blue mud.

Habitat.—China and Sooloo Archipelago (Adams and Reeve), from the Mascarene group across the Indian Ocean to Ceylon, the Nicobars, and Malay Archipelago (v. Martens).

It would be well in this case, as in so many others, to go to Linne for the name of this species and call it *Terebellum terebellum*, Linne. Awkward as such a name is, it is not unexampled, and would be an escape from much contention. Failing this, Martini might supply the name both of the genus and the species. His "*Avena marina*" is admirable.

Family Cypræidæ, Fleming, 1828.

Genus *Cypræa*, Linne, 1758.

Species.

1. *Cypræa bicolor*, Gask.
2. *Cypræa cinerea*, Gm.
3. *Cypræa cylindrica*, Born.
4. *Cypræa lynx*, Linne.
5. *Cypræa microdon*, Gray.
6. *Cypræa miliaris*, Gm.
7. *Cypræa piperata*, Solander.
8. *Cypræa spurca*, Linne.
9. *Cypræa teres*, Gm.
10. *Cypræa vitellus*, Linne.
11. *Cypræa* (*Trivia*) *australis*, Lam.
12. *Cypræa* (*Trivia*) *candidula*, Gask.
13. *Cypræa* (*Trivia*) *pellucidula*, Gask.

1. *Cypræa bicolor* (?) Gaskoin.

Cypræa bicolor, Gaskoin, Proc. Zool. Soc. Lond., 1848, p. 92, sp. 3.
,, *piperata* var., Sowerby, Thes. Conch., pts. 26–28, p. 31, sp. 104, pl. cccxix. (*Gen.* xxviii.) figs. 288, 289, pl. cccxxviii. (*Gen.* xxxvii.) fig. 533.
,, *bicolor*, Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 170, No. 92.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud.

Habitat.—Australia, New Holland, Tasmania, Sandwich Islands (British Museum); Port Adelaide Creek, South Australia (Angas).

The Challenger shell is a very young specimen belonging probably to this species.

Whether the distinction between *Cypræa bicolor* and *Cypræa piperata*, Gray, will stand seems doubtful. At the same time I must remark that the presence of three broad coloured bands in Gaskoin's species, instead of four narrow ones, as in Gray's, is a feature of difference which, however unlikely to be permanent, does yet in fact seem to be so.

2. *Cypræa cinerea*, Gmelin.

Cypræa cinerea, Gmelin, Syst. Nat., p. 3402, No. 16.
Martini, Conch. Cab., vol. i. p. 346, pl. xxv. figs. 254, 255.
,, ,, Dillwyn, vol. i. p. 451, sp. 27.
,, ,, Wood, Ind. Test., p. 88, pl. xvii. fig. 27.
,, ,, Lamarck, Anim. s. vert., vol. vii. p. 386, and (ed. Desh.) vol. x. p. 509, sp. 22.
,, *sordida*, Lamarck, Anim. s. vert., vol. vii. p. 387, sp. 24.
,, ,, Deshayes, Encycl. méthod., vers, vol. iii. p. 823, sp. 21.
,, ,, Kiener, Iconog., p. 84, sp. 73, pl. xxvi. fig. 2.
,, *cinerea*, Gray, Zool. Journ., vol. i. p. 145, vol. iv. p. 72.
,, ,, Reeve, Conch. Icon., vol. iii. pl. xxii. fig. 124.
,, ,, d'Orbigny, Moll. Cuba, vol. ii. p. 91, No. 267.
,, ,, Sowerby, Thes. Conch., pts. 26–28, p. 7, sp. 10, pl. cccvii. (*Gen.* xvi.) figs. 92*, 93.
,, ,, Fischer, Catalogue Coq. de Guadaloupe, &c., Revue coloniale, 1857, p. 7, sp. 4.
,, ,, Weinkauff, Conch. Cab. (ed. Küster), p. 25, pl. vii. figs. 9, 12.

Station 122 to 122c. September 10, 1873. Lat. 9° 5′ S. to 9° 10′ S., long. 34° 49′ W. to 34° 53′ W. Pernambuco. 350 to 400 fathoms. Red mud.

Habitat.—Barbadoes and Jamaica (Weinkauff); Guadaloupe (Fischer); Martinique, Cuba (d'Orbigny).

3. *Cypræa cylindrica*, Born.

Cypræa cylindrica, Born, Test. Mus. Cæs., p. 184, pl. viii. fig. 10.
Martini, Conch. Cab., vol. i. p. 373, pl. xxviii. figs. 294, 295.
,, ,, Dillwyn, vol. i. p. 452, sp. 29.
,, ,, Wood, Ind. Test., p. 88, pl. xvii. fig. 29.
,, ,, Kiener, Iconog., p. 89, sp. 78, pl. xvi. fig. 3.

Cypræa cylindrica, Gray, Zool. Journ., vol. i. p. 382, sp. 45.
" " Lamarck, Anim. s. vert. (ed. Desh.), vol. x. p. 554, sp. 80.
" " Reeve, Conch. Icon., vol. iii. pl. xiv. fig. 64.
" " Sowerby, Thes. Conch., pts. 26–28, p. 9, pl. cccxviii. (*Gen.* xxvii.) figs. 266–268.
" " Weinkauff, Conch. Cab. (ed. Küster), pp. 12, 32, pl. iii. figs. 6, 7, pl. ix. figs. 5, 7.
" " Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 295, No. 59.
" " v. Martens, Moll. Mauritius, &c., p. 271.

February 11, 1875. Zamboangan. 10 fathoms.

Habitat.—From Madagascar and Mauritius to the Malay Archipelago (v. Martens); Torres Strait (Brazier); New Caledonia, Philippines, Japan (Weinkauff).

Weinkauff quotes Schmeltz as his authority for extending this species to Japan, but Dunker does not give it in his Japanese Index.

4. *Cypræa lynx*, Linne.

Cypræa lynx, Linne, Syst. Nat. (ed. 12), p. 1176, No. 344.
Martini, Conch. Cab., vol. i. p. 329, pl. xxiii. figs. 230, 231.
" " Dillwyn, vol. i. p. 450, sp. 25.
" " Wood, Ind. Test., p. 88, pl. xvii. fig. 25.
" " Lamarck, Anim. s. vert., vol. vii. p. 388, and (ed. Desh.) vol. x. p. 513, sp. 29.
" " Deshayes, Encycl. méthod., vers, vol. iii. p. 825, sp. 25, pl. ccclv. fig. 8.
" " Gray, Zool. Journ., vol. i. p. 151, sp. 27.
" " Krauss, Südafrik. Moll., p. 127, sp. 1.
" " Kiener, Iconog., p. 10, sp. 6, pl. xxv. fig. 2, pl. xxxviii. fig. 2.
" " Reeve, Conch. Icon., vol. iii. pl. ix. fig. 33.
" " Hanley, Ipsa Linn. Conch., pp. 187, 498.
" " Sowerby, Thes. Conch., pts. 26–28, p. 21, sp. 63, pl. cccv. (*Gen.* xv.) figs. 85*–88.*
" " Crosse and Fischer, Journ. de conch., 1866, vol. xiv. p. 120.
" " Weinkauff, Conch. Cab. (ed. Küster), p. 79, pl. xxiii. figs. 6, 7, 10, 11.
" " Issel, Mal. Mar Rosso, p. 109.
Luponia lynx, M'Andrew, Moll. Suez, Ann. and Mag. Nat. Hist., 1870, 4th ser., vol. vi. p. 12.
Cypræa lynx, Lischke, Jap. Meer. Conch., vol. i. p. 70, vol. ii. p. 66, vol. iii. p. 47.
" " v. Martens, Moll. Mauritius, p. 268.
" " Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 296, No. 65.
" " Dunker, Index Moll. Mar. Japon., p. 99.
" " E. A. Smith, "Alert" Collections, p. 59, No. 55.

July 21, 1874. Reefs off Tongatabu.

Habitat.—From Natal (Krauss), and the Gulf of Suez (M'Andrew) to Australia (E. A. Smith); Fiji Islands (British Museum); New Caledonia (Crosse and Fischer); Japan (Lischke).

5. *Cypræa microdon*, Gray.

Cypræa microdon, Gray, Zool. Journ., vol. iv. p. 71, No. 11*.
„ „ Lamarck, Anim. s. vert. (ed. Desh.), vol. x. p. 564, No. 93.
„ „ Kiener, Iconog., p. 102, sp. 92, pl. lvi. fig. 5.
„ „ Deshayes, Moll. Réunion, p. 138, No. 539.
„ „ v. Martens, Moll. Mauritius, &c., p. 271.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Pacific Ocean (Gray); Indian Ocean, Ceylon, Nicobars, Malay Archipelago (v. Martens).

I have identified this species by comparison with Gray's types in the British Museum. Sowerby (*see* Pfeiffer, Krit. Register zu Conch. Cab., p. 8, No. 263) has confounded the species (see Conch. Ill., figs. 3, 138). Reeve, if one may judge by his figure and description (Conch. Icon., vol. iii. pl. xxiv. fig. 139), has done so too; as also Weinkauff (Conch. Cab., p. 31, pl. ix. figs. 2, 3, 9, 10, pl. xiii. figs. 5, 8), who unites it with *Cypræa fimbriata*, Gm., from which it is certainly not remote, though I believe it distinct.

6. *Cypræa miliaris*, Gmelin.

Cypræa miliaris, Gmelin, Syst. Nat., p. 3420, No. 106.
Martini, Conch. Cab., vol. i. pp. 349, 393, pl. xxvi. fig. 260, pl. xxx. fig. 323.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 387, and (ed. Desh.) vol. x. p. 511, sp. 26.
„ „ Deshayes, Encycl. méthod., vers, vol. iii. p. 824, sp. 22.
„ „ Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 297, No. 66.
„ „ Dunker, Index Moll. Mar. Japon., p. 99.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York, Torres Strait. 8 fathoms. Coral mud.

Habitat.—Darnley Island, Torres Strait, 20 to 30 fathoms, sand (Brazier); Japan (Berne Museum, Collection Shuttleworth); Moluccas, Philippines (British Museum).

In classing the Challenger specimen as Gmelin's species, I mean simply that it agrees with shells bearing Gmelin's name in the British Museum. My own opinion is that these are the same as others marked *Cypræa lamarckii*, Gray; and that both are distinct from *Cypræa erosa*, Linne, of which Dillwyn (vol. i. p. 461, No. 50) regards Gmelin's species as the young; while Deshayes (Lam., Anim. s. vert., 2d ed., vol. x. p. 511, note) simply unites them, followed herein by Gray (Zool. Journ., vol. i. pp. 504–507), who, however, at the same time resuscitates the *Cypræa miliaris*, Gm., in the form of two new species, *Cypræa lamarckii* and *Cypræa listeri*, of his own making, but one of which at least, if they be good species, ought to have borne Gmelin's name of *Cypræa miliaris*. I have not the means of fully examining this whole question, which is further complicated by Kiener (p. 65, pl. xxxiii. fig. 2, pl. xli. fig. 2, *Cypræa listeri*, Gray; and p. 58, pl. xxx. fig. 2, *Cypræa miliaris*, Gm.;

and p. 59, pl. viii. fig. 2, *Cypræa lamarckii*, Gray), and not materially cleared up by Reeve (Conch. Icon., vol. iii. pl. x. fig. 36, *Cypræa miliaris*, Gm.; and pl. x. fig. 37, *Cypræa lamarckii*, Gray), nor by Sowerby (Thes. Conch., pts. 26–28, pl. xvii. figs. 106, 107, *Cypræa lamarckii*; and fig. 109, *Cypræa miliaris*, Gm.), nor by Weinkauff (Conch. Cab., ed. Küster, p. 109, pl. xxxiii. figs. 6, 7, *Cypræa lamarckii*, Gray; and p. 110, pl. xxxiii. fig. 12, *Cypræa miliaris*, Gm.), nor even by Lischke (Jap. Meer. Conch., vol. iii. p. 48).

7. *Cypræa piperata*, Solander.

Cypræa piperata, Solander MS., *fide* Gray, Zool. Journ., vol. i. p. 498, pl. xii. fig. 6.
" " Sowerby, Conch. Ill., fig. 24.
" " Menke, Specimen Moll. Nov. Holl., p. 30, No. 161.
" " Reeve, Conch. Icon., vol. iii. pl. xvii. fig. 87.
" " Sowerby, Thes. Conch., pts. 26–28, p. 31, sp. 104, pl. cccxix. (xxviii. *Gen.*) figs. 285, 286, 288.
" " Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 170, No. 91.
" " Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 206, No. 125.
" " Weinkauff, Conch. Cab. (ed. Küster), p. 96, sp. 101, pl. xxix. figs. 10–13.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

Habitat.—New Holland (Gray); Port Lincoln South Australia, and Port Jackson Sydney (Angas).

8. *Cypræa spurca*, Linne.

Cypræa spurca, Linne, Syst. Nat. (ed. 12), p. 1179, No. 395.
Martini, Conch. Cab., vol. i. p. 402, pl. xxxi. fig. 355.
" " Dillwyn, Cat., vol. i. p. 462, sp. 52.
" " Wood, Ind. Test., p. 90, pl. xvii. fig. 49.
" *flavcola* (not of Linne), Lamarck, Anim. s. vert., vol. vii. p. 394, and (ed. Desh.) vol. x. p. 525, sp. 42.
" " (not of Linne), Deshayes, Encycl. méthod., vers, vol. iii. p. 830, sp. 36, pl. ccclvi. fig. 14.
" *spurca*, d'Orbigny, Moll. Canaries, p. 87, No. 122.
" " Philippi, Enumeratio Moll. Sic., vol. i. p. 235, vol. ii. p. 199, sp. 5.
" " Gray, Zool. Journ., vol. i. p. 501, No. 71.
" " d'Orbigny, Moll. Cuba, vol. ii. p. 90, No. 266.
" " Hanley, Ipsa Linn. Conch., pp. 194, 500.
" " Kiener, Iconog., p. 61, sp. 53, pl. xxx. fig. 1.
" " Reeve, Conch. Icon., vol. iii. pl. xiv. fig. 68.
" " Fischer, Moll. Guadaloupe, Revue coloniale, 1857, p. 7, sp. 2.
" " Sowerby, Thes. Conch., pts. 26–28, p. 38, sp. 131, pl. cccix. (xviii. *Gen.*) figs. 118–122, pl. cccxxvii. (xxxvi. *Gen.*) fig. 516.
" " Hidalgo, Mol. Marin. España Portugal, &c., p. 8, pl. xi. figs. 1, 2, pl. xi.a. fig. 2.
" " Monterosato, Enumeraz., p. 49.
" " Conch. Cab. (ed. Küster), Weinkauff, p. 102, sp. 111, pl. xxxi. figs. 9–12.

February 10, 1873. Tenerife, Canaries. 78 fathoms.

Station 113A. September 2, 1873. Lat. 3° 47′ S., long. 32° 24′ 30″ W. Anchorage, Fernando-Noronha. 7 to 25 fathoms. Volcanic sand and gravel.

Station 122. September 10, 1873. Lat. 9° 5′ S. to 9° 10′ S., long. 34° 49′ W. to 34° 53′ W. Pernambuco. 350 fathoms. Red mud.

Habitat.—Mediterranean (Linne); Madeira (Watson); Canaries (M'Andrew); West Africa (Weinkauff), West Indies; (d'Orbigny).

9. *Cypræa teres*, Gmelin.

Cypræa teres, Gmelin, Syst. Nat., p. 3405.
„ „ Dillwyn, vol. i. p. 445, sp. 17.
Cypræa tabescens, Gray, Zool. Journ., vol. i. p. 381, No. 44.
„ *teres*, Sowerby, Conch. Ill., p. 7, No. 72, fig. 56.
„ „ Kiener, Iconog., p. 91, sp. 80, pl. xxxix. fig. 3.
„ „ Reeve, Conch. Icon., vol. iii. pl. xviii. fig. 93.
„ „ Sowerby, Thes. Conch., pts. 26–28, p. 9, pl. cccxviii. (xxvii. *Gen.*) figs. 259, 260.

September 1875. Tahiti, near the reefs.

Habitat.—(?)

In thus identifying the Challenger shell referred to above, I only mean that it agrees with shells thus named in the British Museum. Weinkauff, though he excludes for his species some of the authorities quoted above, would probably class it under his *Cypræa subteres*. I have seen no specimens of that species, but neither the figure nor the description, nor the remarks on the description (see Conch. Cab., ed. Küster, p. 27, pl. viii. fig. 4, pl. xiii. figs. 1–4) give the impression that the species is well defined. If, however, there really be two species, which Deshayes (Lam., Anim. s. vert., ed. 2, vol. x. p. 555, No. 81, *Cypræa tabescens*, Dillwyn) and Gray (Zool. Journ., vol. i. p. 381, No. 44 *do.*) and Sowerby (Conch. Ill., fig. 14?) have confounded together, then perhaps Weinkauff has done the best thing possible in cutting the knot, and giving a new name to the second, retaining Gmelin's name for the species which Schröter (Einleitung, vol. i. p. 161, pl. i. fig. 7) had figured and described; only it would have been better, if possible, had the existing names of *teres* and *tabescens* been disentangled and fitted to their respective species without the introduction of this aggressive third name.

10. *Cypræa vitellus*, Linne.

Cypræa vitellus, Linne, Syst. Nat. (ed. 12), p. 1176, No. 341.
Martini, Conch. Cab., vol. i. p. 327, pl. xxiii. figs. 228, 229.
„ „ Dillwyn, vol. i. p. 448, sp. 21.
„ „ Wood, Ind. Test., p. 88, pl. xvii. fig. 21.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 385, and (ed. Desh.) vol. x. p. 507, sp. 20.
„ „ Deshayes, Encycl. méthod., vers, vol. iii. p. 822, sp. 18, pl. cccliv. fig. 6.
„ „ Quoy and Gaimard, "Astrolabe," Zool., vol. iii. p. 39, pl. xlviii. figs. 8, 9.
„ „ Krauss, Südafrik. Moll., p. 127, sp. 2.
„ „ Gray, Zool. Journ., vol. i. p. 150, pl. iv. fig. 74, No. 25.
„ „ Hanley, Ipsa Linn. Conch., pp. 186, 498.
„ „ Kiener, p. 12, sp. 7, pl. xix. fig. 1.
„ „ Reeve, Conch. Icon., vol. iii. pl. v. fig. 14.

Cypræa vitellus, Deshayes, Moll. Réunion, p. 137.
„ „ Sowerby, Thes. Conch., pts. 26–28, p. 13, sp. 37, pl. ccxcvii. (vi. *Gen.*) figs. 31–33.
„ „ Crosse, Cat. Cypræa New Caledonia, Journ. de conch., vol. xvii. p. 51, sp. 19.
„ „ Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 205, No. 117.
„ „ Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 296, No. 64.
„ „ Lischke, Jap. Meer. Conch., vol. i. p. 70, vol. ii. p. 66, 167.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 38, pl. xi. figs. 6, 7, 10, 11 (*vessime*).
„ „ v. Martens, Moll. Mauritius, &c., p. 269.
„ „ Dunker, Index Moll. Mar. Japon., p. 99.

July 21, 1874. Reefs off Tongatabu.

Habitat.—From the east coast of Africa (Krauss) and the Red Sea across the Indian Ocean and the Malay Archipelago (v. Martens); Malay Archipelago, Polynesia, and Australia (v. Martens); Auckland Islands, Tahiti, Japan (Lischke) to Australia (rare, Angas); the Auckland Islands, Tahiti, and Japan (Lischke).

11. *Cypræa* (*Trivia*) *australis*, Lamarck.

Cypræa australis, Lamarck, Anim. s. vert., vol. vii. p. 404, and (ed. Desh.) vol. x p. 545, sp. 67.
„ „ Quoy and Gaimard, "Astrolabe," Zool., vol. iii. p. 48, pl. xlviii. figs. 19–26.
„ „ Sowerby, Conch. Ill., fig. 29.
Trivia australis, Gray, Zool. Journ., vol. iii. p. 570, sp. 108.
Cypræa australis, Kiener, Iconog., p. 138, sp. 125, pl. xlviii. fig. 2.
„ „ Reeve, Conch. Icon., vol. iii. pl. xxiv. fig. 138.
„ „ Menke, Specimen Moll. Nov. Holl., p. 30, No. 162.
Trivia australis, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 206, No. 127.
Cypræa (*Trivia*) *australis*, Sowerby, Thes. Conch., pts. 26–28, p. 45, No. 159, pl. cccxxv. (xxxiv. *Gen.*) pp. 439, 440.
Cypræa australis, Weinkauff, Conch. Cab. (ed. Küster), p. 142, pl. xxxix. figs. 14, 15.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

Habitat.—New Holland (Lamarck); Port Jackson (Angas).

12. *Cypræa* (*Trivia*) *candidula*, Gaskoin.

Cypræa candidula, Gaskoin, Proc. Zool. Soc. Lond., 1835, p. 200.
„ „ Sowerby, Conch. Ill., fig. 149.
„ „ Kiener, Iconog., p. 150, sp. 136, pl. lii. fig. 1.
„ „ Reeve, Conch. Icon., vol. iii. pl. xxvi. figs. 151, 154.
„ „ M'Andrew, Geog. Distrib. Moll. N. Atlantic, pp. 34, 41.
„ „ Hidalgo, Cat. Moll. Test. Espagne, &c., p. 116.
„ „ Hidalgo, Mol. Marinos de España, Portugal, &c., p. 15, pl. xi. figs. 9, 10.
„ „ Monterosato, Enumerazione, p. 49.
„ „ Sowerby, Thes. Conch., pts. 26–28, p. 50, sp. 180, pl. cccxxvii. (xxxvi *Gen.*) figs. 508, 509.

February 10, 1873. Tenerife, Canaries. 78 fathoms.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 to 490 fathoms. Volcanic mud.

Habitat.—Mexico (Gaskoin); Madeira (Watson); Canaries (M'Andrew); Spanish south coast (Hidalgo); Mediterranean (Monterosato).

I have quoted Sowerby above in the hope that it is this species to which his description (if description it can be called) and figure refer. Weinkauff (Conch. Cab., p. 158, sp. 177, pl. xlii. figs. 10, 11) it is impossible to quote, for he does not seem to have kept this species before him even if he ever got hold of it, disturbed as he seems to have been with help offered him to this end. At the same time, the doubt he seems to imply of the species from the Mediterranean, Madeira, and Canaries being really the Mexican species referred to by Gaskoin, seems not to be without some foundation. One could wish he had given this point closer attention.

13. *Cypræa* (*Trivia*) *pellucidula*, Gaskoin.

Cypræa pellucidula, Gaskoin, Proc. Zool. Soc. Lond., 1846, p. 23.
„ „ Reeve, Conch. Icon., vol. iii. pl. xxvi. fig. 153.
„ „ Sowerby, Thes. Conch., pts. 26–28, p. 50, No. 182, pl. cccxxvii. (xxxvi. *Gen.*), figs. 497–499.
„ *pellicula*, Weinkauff, Conch. Cab. (ed. Küster), p. 161, No. 180, pl. xliii. figs. 1, 4.
Trivia pellucidula, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, vol. i. p. 299, No. 77.

July 1875. Reef off Honolulu. 40 fathoms.

Habitat.—South Pacific (Gaskoin), Torres Strait (Brazier).

Weinkauff (Conch. Cab., *ut supra*) says that this species has not been found since Gaskoin, that all the specimens he has seen in collections under this name are *Cypræa* (*Trivia*) *hordacea*, Kiener, and he administers a severe reproof to him who is reckoned "in England als erste Autorität für die Cyprædæ" for inconsiderateness and other shortcomings in presenting a "so schwach fundirte Art." The species, however, is after all a good one, and its author is not responsible for Mr Weinkauff's spelling.

Family VELUTINIDÆ, Gray, 1840.

Genus *Separatista*,[1] A. Adams, 1850.

The name of the genus was taken by Gray from Chemnitz's name of the species (*loc. cit. infra*) and was published in Proc. Zool. Soc. Lond., 1847, p. 136, No. 31, but the genus was defined by A. Adams, Proc. Zool. Soc. Lond., 1850, p. 45.

Separatista chemnitzii, A. Adams.

Turbo helicoïdes (*bis*), Gmelin, Syst. Nat., p. 3598, No. 109.
„ *separatista*, Chemnitz, Conch. Cab., vol. x. p. 298, pl. clxv. figs. 1589, 1590.
„ „ Dillwyn, Cat., vol. ii. p. 867, sp. 124.
„ „ Wood, Ind. Test., p. 158, pl. xxxii. fig. 126.
Separatista chemnitzii, A. Adams, Proc. Zool. Soc. Lond., 1850, p. 45.
Trichotropis blainvilleanus, Petit de la Saussaye, Journ. de conch., 1851, vol. ii. p. 22, pl. i. fig. 5.

Station 208. January 17, 1875. Lat. 11° 37′ N., long. 123° 31′ E. Philippines. 18 fathoms. Blue mud.

Habitat.—Philippines (A. Adams).

Strictly speaking, Gmelin has priority with his name for this species, but having called two different shells *Turbo helicoïdes*, and neither of these proving to be a Turbo, he may fairly be held to have forfeited his rights of nomenclature.

As to the synonymy, after careful examination of Adams' own type of his species as preserved in the British Museum, and comparison with it of two specimens agreeing perfectly with Petit's figure and description of *Turbo blainvilleanus*, there remained no doubt that the opinion Beck seems to have held of this species of Petit (see Journ. de conch., 1851, vol. ii. p. 23)[1] was correct, and that the variability of form belonging to the species is sufficient to allow both of these to be included under one name. Chemnitz's figure only presents two spirals on the last whorl, but his description mentions the shell to be "tricarinatum," and he explains this by saying that besides the sharp corner "auch findet man dichte darneben noch ein Paar scharfe Queerstreifen, daher habe ich ihre *testam* als *tricarinatam* beschrieben."

Family Naticidæ, Forbes, 1828.

Genus *Natica*, Adanson, 1757.

There is no great variety of form among the Naticas, even less of colour, least of all of sculpture, and with the merely varietal changes which occur in all these features the determination of species in this genus is exceptionally difficult. Philippi's monograph in Küster's continuation of the Concylien Cabinet of Martini and Chemnitz is, as usual with his work, admirable. There are points which he himself indicates as requiring revision prevented by his departure for South America. On some other points one may be allowed to differ from him. It is to be regretted that Reeve, in preparing his monograph for the Conchologia Iconica, did not consult Philippi's work, which had been already for three years before the public. Still more that Sowerby, after an interval of thirty-one years, bringing out in 1883 his Monograph on the genus in the Thesaurus, seems just as little as Reeve to have had Philippi's work before him, and in spite of all the species which had been published in the interval his whole Index is no fuller and his list of species is poorer by thirty-six than Philippi's.

Species.

1. *Natica affinis* (Gm.)
2. *Natica euzona*, Recluz.
3. *Natica grisea*, v. Mart.
4. *Natica rufa* (Born).
5. *Natica sagittata*, Menke.
6. *Natica seychellium*, Wats.
7. *Natica variabilis*, Recluz.
8. *Natica radiata*, Wats.
9. *Natica amphiala*, Wats.
10. *Natica atypha*, Wats.

[1] I have taken for granted here that Beck meant to refer to this species of Chemnitz and not to that other occurring in the same vol. x., and to which M. Petit makes him refer (Conch. Cab., vol. x. p. 4, pl. cxxxvii. figs. 1271–1273). Dr Beck's opinion seems to have been expressed in conversation, in which circumstances the mistake might easily come either to the speaker or to the hearer. On comparison of the two figures and the two descriptions one cannot doubt which Dr Beck meant to refer to.

11. *Natica effossa*, n. sp.
12. *Natica insularum*, n. sp.
13. *Natica leptalea*, Wats.
14. *Natica philippinensis*, Wats.
15. *Natica psila*, n. sp.
16. *Natica pseustes*, Wats.
17. *Natica xantha*, Wats.
18. *Natica* (*Lunatia*) *grönlandica*, Beck.
19. *Natica* (*Lunatia*) *fartilis*, Wats.
20. *Natica* (*Lunatia*) *prasina*, Wats.
21. *Natica* (*Neverita*) *albumen* (Linne).
22. *Natica* (*Neverita*) *conica*, Lam.
23. *Natica* (*Neverita*) *didyma*, Bolten.
24. *Natica* (*Mamma*) *aurantia*, Lam.
25. *Natica* (*Mamma*) *draparnandi*, Recluz.
26. *Natica* (*Mamma*) *mamilla* (Linne).
27. *Natica* (*Mamma*) *porcellana*, d'Orb.
28. *Natica* (*Amauropsis*) *perscalpta*, v. Mart.
29. *Natica* (*Amauropsis*) *apora*, Wats.
30. *Natica* (*Amauropsis*) *suturalis*, Wats.

1. *Natica affinis* (Gmelin).

Nerita affinis, Gmelin, Syst. Nat., p. 3675.
Natica clausa, Broderip and Sowerby, Zool. Journ., vol. iv., 1829, p. 372 (var. *minor*).
„ *consolidata*, Couthouy, Bost. Journ. Nat. Hist., vol. ii., 1839, p. 89, pl. iii. fig. 14.
„ *janthostoma*, Deshayes, Rev. Zool. Soc. Cuvierienne, 1839, p. 361.
„ „ Deshayes, Mag. de Zool., 1841, Moll., pl. xlv.
„ *consolidata*, Philippi, Abb. und Besch., vol. i., 1842, p. 17, sp. 11, pl. i. fig. 11.
„ *clausa*, Gould, Inverteb. Massachusetts, p. 238, fig. 167, and (ed. Binney) p. 342, fig. 612.
„ „ Gray, Zool. of Beechey's Voyage, p. 136, pl. xxxiv. fig. 3, pl. xxxvi. fig. 6.
„ „ Reeve, Conch. Icon., vol. ix. pl. xxv. fig. 113.
„ *ianthostoma*, Reeve, Conch. Icon., vol. ix. pl. xvii. fig. 79.
„ *affinis*, de Kay, Zool. N. York, Moll., vol. v. p. 122, pl. vii. fig. 150.
„ *septentrionalis*, Beck, *apud* Möller, Ind. Moll. Grönland, p. 7.
„ *clausa*, Forbes, Geol. Relations of British Fauna and Flora, Memoirs Geol. Surv., vol. i. p. 429, No. 147.
„ „ Lovén, Index Moll. Scandinav., Öfversigt Vet. Akad. Förh., 1846, p. 17, No. 123 (*Nerita affinis*, Gmel.?)
„ „ Searles Wood, Crag Moll., Palæont. Soc., 1848, p. 147, sp. 11, pl. xvi. fig. 2.
„ „ Middendorff, Malakozool. Rossica, pt. 2, p. 91, sp. 4.
„ „ Philippi, Conch. Cab. (ed. Küster), p. 99, sp. 112, b. pl. xiv. fig. 6 (var. *minor*).
„ *janthostoma*, Philippi, Conch. Cab. (ed. Küster), p. 53, sp. 55, pl. viii. fig. 8.
„ *affinis*, Mörch, West Greenland Moll. in Rink's Grönland, No. 73.
„ *clausa*, Schrenk, Reisen in Amur Lande, Zool., 1859–67, Moll., vol. ii. p. 373.
„ *affinis*, Mörch, Oversigt af Islands Blöddyr, Vidensk. Meddel. f. d. Nat. Foren. Kjöbenhavn, 1868, p. 24, No. 52.
„ *janthostoma*, Lischke, Japan. Meeres Conch., vol. i. p. 81.
Nerita affinis, Gwyn Jeffreys, Brit. Conch., vol. iv. p. 229, and (*Natica affinis*) vol. v. p. 215, pl. cii. fig. 3.
Natica affinis, Gwyn Jeffreys, Norwegian Moll., Ann. and Mag. Nat. Hist., June 1870, ser. 4, vol. v. p. 9 (separate impression).
„ „ Gwyn Jeffreys, Moll. of Europe and N.E. America, Ann. and Mag. Nat. Hist., Oct. 1872, ser. 4, vol. viii. p. 244, No. 342.
„ „ Tryon, American Mar. Conch., p. 58, pl. ix. fig. 94.
„ „ Friele, Catalog Moll. Spitzbergen, p. 272, No. 14.
„ „ Dall, Shells from Behring's Strait, &c., Proc. Calif. Acad. Sciences, p. 5, No. 88.
„ *janthostoma*, E. A. Smith, Japan Gasterop., Ann. and Mag. Nat. Hist., ser. 4, vol. xv., 1875, p. 426, No. 48.
„ *affinis*, Gwyn Jeffreys, "Valorous" Moll., Ann. and Mag. Nat. Hist., April 1877, ser. 4, vol. xx. p. 318 (animal).

Natica clausa, G. O. Sars, Moll. Arct. Norv., p. 159, No. 63, pl. xxi. figs. 12, 13, pl. v. *bis*, fig. 15, pl. xviii. *bis*, fig. 12.
„ *affinis*, G. O. Sars, Moll. Arct. Norv., p. 160, No. 64, pl. xxi. fig. 14, pl. v. *bis*, fig. 16.
„ *clausa*, Leche, Novaja Semlja &c. Hafs-Mollusker, K. Svensk. Vetensk.-Akad. Handl., vol. xvi., 1878, pt. 2, p. 49, No. 93.
„ *affinis*, Monterosato, Enumerazione, p. 36.
„ „ Norman, Moll. of Bergen Fjords, Journ. of conch., Jan. 1879, pp. 28, 74 (separate impression), No. 200.
„ „ Darbishire (*teste* Gwyn Jeffreys' list of), Moel Tryfan Shells, Journ. Geol. Soc. Lond., 1880, p. 354.
„ „ D'Urban, Zool. Barents Sea, Ann. and Mag. Nat. Hist., Oct. 1880, ser. 5, vol. vi. p. 267.
„ „ Norman, President's Address Tyneside Nat. Club, 1881, p. 54.
„ *clausa*, Dunker, Index Moll. Mar. Japon., p. 60.
„ *affinis*, Gwyn Jeffreys, "Triton" Moll., Proc. Zool. Soc. Lond., 1883, p. 391 (Station 8, cold area, No. 5).
„ „ Gwyn Jeffreys, Bridlington Clay Shells, Journ. Geol. Soc. Lond., 1884, p. 319.
„ *clausa*, Sowerby, Thes. Conch., pts. 39, 40, p. 96, sp. 125, pl. cccclvii. (iv. *Gen.*), fig. 48.
„ *ianthostoma*, Sowerby, Thes. Conch., pts. 39, 40, p. 82, sp. 41, pl. cccclvii. (iv. *Gen.*), fig. 52.
„ *clausa*, Verrill, Moll. New Eng., Trans. Connect. Acad., vol. vi. pt. I, p. 268.
„ *affinis*, Gwyn Jeffreys, Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1885, p. 35, sp. 16.

Station 49. May 20, 1873. Lat. 43° 3′ N., long. 63° 39′ W. Off Halifax. 85 fathoms. Stones and gravel. Bottom temperature 35°.

Habitat.—The North Atlantic from Greenland (Mörch) to New England, 13 to 1255 fathoms (Verrill); and from the Mediterranean, 1415 fathoms (Monterosato[1]), to Spitzbergen, 20 to 260 fathoms (Friele); Barents Sea, 25 to 160 fathoms (D'Urban); Nova Zembla and at the Yenissei, 2 to 70 fathoms (Leche); Behring's Strait (Dall); Kamtskatka (Deshayes); the Sea of Okotsk and the Schantar Islands (Middendorf); Japan (E. A. Smith and Lischke).

Fossil.—From the Pliocene (S. V. Wood), onwards from 0 to 1360 feet (Gwyn Jeffreys).

Professor Sars (*loc. cit. supra*) maintains the distinctness of Gmelin's species from that of Broderip and Sowerby; I have, however, followed the general opinion and united them, having utterly failed to find trustworthy differences in the shells, and believing that the divergences which Professor Sars has figured in the radula of the two forms are merely varietal, and are to be met with on even a more extensive scale in almost every species. After very careful examination of the large series of specimens of the British Museum I have, in spite of Dr Dunker, without hesitation followed Middendorff and Schrenk in uniting *Natica janthostoma*, Desh., to Gmelin's species. The question is very fully and discriminatingly discussed by Lischke (*loc. cit. supra*), who somewhat inclines to Middendorff's view, but in the absence of a sufficient series of specimens allows Deshayes' species to stand.

[1] The Marquis of Monterosato (*loc. cit. supra*) states this on the authority of Gwyn Jeffreys, but I have failed to find his reference.

2. *Natica euzona*, Recluz.

Natica euzona, Recluz, Proc. Zool. Soc. Lond., 1843, p. 204, sp. 2.
„ „ Recluz, Journ. de conch., 1850, vol. i. p. 381, pl. xiv. fig. 3.
„ „ Philippi, Conch. Cab. (ed. Küster), p. 147, sp. 177.
„ *decora*, Philippi, Conch. Cab. (ed. Küster), p. 118, sp. 138, pl. xvii. fig. 2.
„ *picta* var., Reeve, Conch. Icon., vol. ix. pl. xv. fig. 67c. (not a. and b.)

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Philippines (Recluz).

Philippi's fig. of *Natica decora* certainly represents *Natica euzona*, Recl. It is true, indeed, that (*loc. cit. supra*) he refers to *Natica euzona*, but he does not figure it, and at p. 146 he expressly says that it is a species "mir durchaus unbekannt," which explains his giving it under a new name.

Natica areolata, Recl., considerably resembles this species, but is much smaller, has a continuous brownish-yellow band beneath the suture (while in *Natica euzona* it is fulgurated), the intermediate white-brown bands are fewer and much less distinct, and the umbilical pad is larger, less clean-cut, and fills up the whole lower part of the umbilicus without the definite furrow which in *Natica euzona* leads out on the pillar. *Natica picta*, Recl., has five, not four, brown-white bands, which are much narrower and sharper than in *Natica euzona*, and the brown interstices are uniform, not in brown and white lines; the lower part of the umbilicus, too, is filled up, as in *Natica areolata*, but much more confusedly. In the British Museum there are very fine large specimens of *Natica euzona*, an inch high and $1\frac{1}{4}$ inches broad, marked as a variety of *Natica picta*, Recl., and so figured by Reeve. Sowerby has made hopeless confusion of the species, so that I do not attempt to quote him.

3. *Natica grisea*, v. Martens (Pl. XXVIII. fig. 5).

Natica grisea, v. Martens, Sitzungs-Ber. Gesellsch. Naturf. Freunde Berlin, Feb. 19, 1878, p. 24.

Station 149B. January 17, 1874. Lat. 49° 28′ S., long. 70° 30′ E. Near entrance of Royal Sound, Kerguelen. 25 fathoms. Volcanic mud.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Station 149F. January 27, 1874. Lat. 48° 55′ S., long. 69° 31′ E. Howe's Foreland, Kerguelen. 95 fathoms. Volcanic mud.

Professor v. Martens identified this species for me. In his diagnosis he does not mention the operculum. It has a thinnish calcareous layer over a pretty strong horny interior, which projects uncovered round the entire edge, but this uncovered edge is narrowest on the inner lower side, *i.e.*, near the pillar of the shell or spire of the operculum. Here the exterior flat surface of the calcareous layer is thickened by a thin dirty grey spread-out spot of limy substance. Beyond this spot the surface of the calcareous layer is strongly scored with radiating lines. Its interior surface can be seen through the horny layer to be sharply and delicately striate spirally.

4. *Natica rufa* (Born).

Nerita rufa, Born, Test. Mus. Vindobon., p. 398, pl. xvii. figs. 3, 4.
Chemnitz, Conch. Cab., vol. v. p. 258, pl. clxxxvii. figs. 1872–1875.
„ *forskälii*, Chemnitz, Conch. Cab., vol. xi. p. 172, pl. cxcvii. figs. 1901, 1902.
„ *rufa*, Dillwyn, Cat., vol. ii. p. 980, sp. 7.
„ „ Wood, Ind. Test., p. 177, pl. xxxv. fig. 8.
Natica rufa, Lamarck, Anim. s. vert., vol. vi. (2) p. 201, and (ed. Desh.) vol. viii. p. 639, sp. 18.
„ „ Deshayes, Encycl. méthod., vers, vol. iii. p. 602, sp. 12.
„ „ Philippi, Conch. Cab. (ed. Küster), pp. 14, 85, sp. 7, pl. ii. figs. 1, 2, pl. xiii. figs. 1, 2.
„ *spadicea*, Reeve, Conch. Icon., vol. ix. pl. iii. fig. 9.
„ *rufa*, Issel, Malac. Mar Rosso, p. 187, No. 460.
„ „ Sowerby, Thes. Conch., pts. 39, 40, p. 80, sp. 27, pl. ccccl vii. (iv. *Gen.*) fig. 42.
„ „ v. Martens, Moll. Mauritius, &c., p. 276.
„ *cumingiana*, Cooke, Review of M'Andrew's Moll. Suez, pt. 2, Ann. and Mag. Nat. Hist., July 1885, ser. 5, vol. xvi. p. 37.

Station 190. September 12, 1874. Lat. 8° 56′ S., long. 136° 5′ E. Arafura Sea. 49 fathoms. Green mud.

Habitat.—The Red Sea (Issel) and Indian Ocean to Ceylon, the Nicobars, and the Malay Archipelago (v. Mart.)

I fear that *Natica vitellus*, Linne, is the true name of this species, but the confusion resulting from the change may be an excuse for retaining Born's name. (See Hanley, Ipsa Linn. Conch., p. 394).

5. *Natica sagittata*, Menke.

Natica sagittata, Menke, 1843, Molluscorum Nov. Holl. Specimen, p. 10, No. 30.
„ „ Philippi, Conch. Cab. (ed. Küster), p. 108, sp. 124, pl. xv. fig. 14.
„ *marochiensis*, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 197, No. 66.
„ „ Angas, Additional Moll. South Australia, Proc. Zool. Soc. Lond., 1878, p. 866, No. 17.
„ „ Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 236, No. 47.
„ „ Tate on Menke's Australian Shells, Proc. Linn Soc. New South Wales, 1881, vol. vi. p. 390.

May 1874. Port Jackson, Sydney. 6 to 7 fathoms.

Habitat.—Australia, Port Jackson (Angas); Eastern and North-eastern Australia, Papua, Solomon, Caroline, and Marshall Islands (Brazier).

The authors quoted above may be pretty confidently taken as referring to this species. There are other references which require mention, but which are unsatisfactory as certainly covering more than this species, even if, as has been supposed, they really include it. These are *Neritæ maroccanæ*, Chemnitz, Conch. Cab., vol. v. p. 270, pl. clxxxviii. figs. 1907–1910 [not figs. 1905, 1906, according to Pfeiffer, Kritisches Register zu Konch. Kab., p. viii., No. 6, who bases on these two figures his West Mexican species *Natica chemnitzii*, which Dr Carpenter, Monog. Californian Shells, Proc. Zool. Soc. Lond. 1856, p. 227, No. 106, considers distinct from his *Natica? maroccana*, var. *californica*];—

Nerita marochiensis, Gmelin, Syst. Nat., p. 3673, No. 15;—*Natica marochiensis*, Lamarck, Anim. s. vert., vol. vi. (2), p. 203, and (ed. Desh.) vol. viii. p. 642, sp. 25, (*Natica unifasciata*, Lam., Delessert, Recueil, pl. xxxii. fig. 13, is a synonym, see Deshayes' note on p. 625, *loc. cit. supra*);—*Nerita marochiensis*, Wood, Ind. Test., p. 178, pl. xxxv. fig. 14;—*Natica maroccana*, Philippi, Conch. Cab. (ed. Küster), p. 78, sp. 18, pl. iii. figs. 10–13, 25, 26, pl. xii. figs. 1–5;—*Natica marochiensis*, Reeve, Conch. Icon., vol. ix. pl. xiii. fig. 52;—*Natica marochiensis*, Sowerby, Thes. Conch., pts. 39, 40, p. 82, sp. 38, pl. cccclxi. (viii. *Gen.*) figs. 108, 109, and pl. cccclxii. (ix. *Gen.*), fig. 151; and v. Martens, Moll. Mauritius, &c., p. 276. A full but not quite satisfactory statement by Koch regarding the synonymy of the species will be found in Menke's Zeitschrift f. Malak., 1845, p. 151. A note, too, on the subject by Carpenter will be found in the Proc. Zool. Soc. Lond., 1863, p. 357, which, taken in conjunction with what he had said in Proc. Zool. Soc. Lond., 1856, p. 227, would have led one to expect a separation of the Pacific and Atlantic forms at least.

The operculum of this species does not seem to have been described. It is in form gibbously oval —calcareous, with a thin, brownish-yellow membrane covering the interior face—pretty strong, being thickened and hunchy in the middle: the coils of the spire, which are shown on the interior face, are on the exterior face thickened with a largish diffused brownish pad: toward the upper pillar border the whole exterior face is somewhat undulating, and thins off to a blunt, narrow, but squarish and longitudinally scored edge on the outer border, where it is edged by a single narrow very slightly raised rounded rim, on the inner side of which is a shallow ill-defined furrow.

In *Natica maroccana*, Chem. (*dillwynii*, Payr), the calcareous operculum is discoidal, being thin and almost quite flat on both faces. Only on the front of the spire there is a slight, smallish, irregularly pear-shaped, darkish coloured thickening; round the outer margin is a slightly raised narrowish border, divided longitudinally into two ridges by a deep sharp-cut narrow cleft, towards which the surface of both the ridges is bevelled up. The inner and slightly broader ridge is parted from the flat part of the surface by a strongish square-cut furrow, which is rather broader than the ridge. The outer ridge is bordered outside by a very narrow flat shelf.

I have described these opercula thus minutely because the operculum in *Natica* is a very constant feature, and the difference between the two species in question, though not more certainly established, is at least more strikingly shown in their respective opercula than it is elsewhere.

6. *Natica seychellium*, Watson.

Natica mahesense, Recluz MS.
„ *maheense*, Reeve, Conch. Icon., vol. ix. pl. xiv. fig. 58.
„ „ Brazier, "Chevert" Exped. Mar. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 235, No. 45.
„ *maheensis*, Sowerby, Thes. Conch., pts. 39, 40, p. 81, sp. 36, pl. cccclvii. (iv. *Gen.*) fig. 40.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Off Malanipa, Philippines. 10 to 20 fathoms. Sand.

Habitat.—Mahé in the Seychelles (Reeve and British Museum); Torres Strait, 30 fathoms (Brazier).

This is *not* the *Natica mahesiensis*, Dufo, Ann. Sc. Nat., ser. 2 (1840), vol. xiv. p. 193, nor (?) of Philippi, Conch. Cab. (ed. Küster), p. 121, sp. 142, pl. xvii. fig. 7. Did Reeve mean to reproduce Dufo's species, which, as well as Reeve's, comes from the little island of Mahé, one of the Seychelles, in the Indian Ocean? The resemblance of the name would seem to imply that he did. It is evident he did not consult Philippi's monograph, published in 1852, three years before his own. Where then did he get the name? He quotes it from "Recluz MS., Mus. Cuming," and seems to have copied, with addition, the error Recluz had made in spelling.

The three specimens bearing the name "*N. Mahesense*" (*sic*) on the back of the tablet are in the British Museum, and answer perfectly to Reeve's figures. These constitute the types of the species, and it is with them the Challenger specimen agrees. The name as pre-occupied by Dufo has necessarily been changed.

I have not quoted v. Martens, Moll. Mauritius, &c., p. 276, because he seems to have mixed up Recluz's and Dufo's species.

7. *Natica variabilis*, Recluz.

Natica variabilis, Recluz MS.
" " Reeve, Conch. Icon., vol. ix. pl. xxiii. fig. 104.
" *labrella* (not of Lamarck), Philippi, Conch. Cab. (ed. Küster), pl. xi. fig. 3 (not the description p. 68, nor pl. xi. fig. 17, nor pl. xix. fig. 1).
" *marmorata*, H. Adams, Proc. Zool. Soc. Lond., 1869, p. 274, pl. xix. fig. 8.
" *variabilis*, Sowerby, Thes. Conch., pts. 39, 40, p. 95, sp. 123 (ix. *Gen.*), pl. cccclxii. fig. 135.
" *marmorata*, Gwyn Jeffreys, Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1885, p. 36, sp. 18.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 fathoms. Volcanic mud.

Habitat.—(?) (Reeve), Canaries (H. Adams, and Rev. R. T. Lowe's dredgings), Madeira (Watson).

I suppose that this is one of the species covered by Linne's name of *Natica glaucina*. Mr Hanley admirably describes it at p. 394 of his Ipsa Linn. Conch. Philippi (pl. xi. fig. 3) figures and (at p. 68 of his Monograph) refers to a species which I have no doubt is the *Natica variabilis*, Recl., but he considers it a var. of *Natica labrella*, Lam., which he also describes (p. 68, sp. 79) and figures (pl. xi. fig. 17, and pl. xix. fig. 1). These latter figures and the description agree perfectly with Lamarck's description (Anim. s. vert., vol. vi. 2 p. 201, and ed Desh. vol. viii. p. 639, sp. 17), and with Delessert's figure (pl. xxxii. fig. 12), from which indeed Philippi says he took his figure, but belong evidently to a species distinct from the *Natica variabilis*, Recl., and to this conclusion Philippi himself came, for, at p. 133, he says that Delessert's fig. and his own represent *Natica gambiæ*, Recl., Proc. Zool. Soc. Lond., 1843, p. 207, which must therefore be reckoned as a mere synonym for *Natica labrella*, Lam., and he adds: "Dagegen sind mir jetzt sehr grosse Bedenken aufgestiegen, ob die Tafel xi. fig. 3, abgebildete Form wirklich zu *Natica labrella* gehört und nicht viel mehr eine eigne Art bildet. Leider erlaubt mir meine nahe bevorstehende Abreise nach Südamerika nicht, diese Frage weiter zu untersuchen." As I have said, I have no doubt that the species to which Philippi's

pl. xi. fig. 3 belongs, is *Natica variabilis*, Recl., the type of which, figured by Reeve, is in the British Museum. Adams' *Natica marmorata* is also the same species, for he says that McAndrew dredged it at the Canaries, and his description and figure agree perfectly with the *Natica variabilis*, Recluz, found there. H. Adams' name of *Natica marmorata* has indeed been associated with a Philippine Island species, and in the McAndrew Collection, British Museum, this name is attached to a specimen derived (*teste* McAndrew's own hand) from the Red Sea, but that species, though extremely like, is, I think, distinct (see *Natica pseustes*, Wats., at p. 445).

The Messrs Adams (Genera, vol. i. p. 207) put *Natica variabilis* into their group *Lunatia*, which they ascribe to Lamarck, but which was really proposed by Gray in his List of Genera, p. 149, 1847; for some reason, however, he does not reproduce it in his Guide, 1857. The present species does not belong to that group, for its umbilicus is not "wide" nor "pervious," and is "funiculate," and the operculum is not "simple, cartilaginous," but is calcareous, with a border on the right of three narrow flat raised ribs (of which the exterior one is often split into two), parted by very narrow shallow sharp-cut furrows. Parallel to these six or eight flat elongated tubercles score the left edge of the operculum towards its apex.

Dr Gwyn Jeffreys (*loc. cit.*) says that *Natica prietoi*, figured by Hidalgo (Mol. Mar. de España, pl. xx.B. figs. 2, 3), is this species, "*ex typo*." I have not seen Dr Hidalgo's type, but should not, from the figure, have taken it for Recluz's species.

8. *Natica radiata*, Watson (Pl. XXVII. fig. 5).

Natica radiata, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 258.

North Atlantic, April or May 1873. Over 1000 fathoms.

Station 33. April 4, 1873. Lat. 32° 21′ 30″ N., long. 64° 35′ 55″ W. Bermuda. 435 fathoms. Coral-mud.

Shell.—Strong, conically globose, with a high scalar spire, laterally compressed, so that its outline is peculiarly square; mouth small; umbilicus open, deep, and funiculate. *Sculpture:* Longitudinals—there are many unequal but generally fine lines of growth, which are strong above, and there radiate like curved spokes from the suture; they are sharpest and highest on the earlier whorls; on the base they are again stronger, and on the edge of the umbilicus they are sharply bent back, and form there an indistinct carina. Spirals—the whole surface is covered with very faint and narrow obsolete lines and furrows, over which is a minute system of sharp microscopic scratches. *Colour* polished porcellanous white, with an indistinct and indefinite staining of buff below the shoulder and round the outside of the umbilicus. *Epidermis:* within the umbilicus are remains of a rather strong, thinnish, smooth, but puckered, blackish-yellow membrane. *Spire* high, scalar. *Apex* large, tumid, but with the extreme tip a very little bent down. *Whorls* 5, of which $1\frac{3}{4}$ are embryonic and glossy, rounded and rising high, each above the preceding one; they are laterally compressed so as to give a peculiar character to the shell, which is angulately shouldered below the suture, and tumid and broad at the base. *Suture* oblique,

impressed, but not channelled. *Mouth* very small for the genus, very oblique, semicircular, but reduced by the large superior labial pad to a flat-sided oval; deep but not open; its height is less than three-fourths that of the whole shell. *Outer lip* narrow, but strong; it rises a very little at its junction with the body, retreats a good deal throughout its whole very equable sweep, till on the base towards the point of the pillar it very slightly advances, and there alone is a very little patulous. *Inner lip* oblique, very slightly concave; on the body it is formed by a large porcellanous white pad projecting in a rounded knob, between which and the sharp edge of the outer lip is a small shallow depression; retreating and becoming thinner on the body this pad projects prominently across the shell above the umbilicus, which it somewhat covers, but a furrow above the umbilical pillar cuts in on it; it spreads out in a half-circle on the point of this umbilical pillar; below this point another umbilical furrow cuts still deeper into it, but toward the point of the pillar it is broadened and reverted on the thickening of the slight circum-umbilical carination. *Umbilicus* strong and deep, narrowed by the overspread of the pillar-lip and by the strong, twisted, umbilical pillar, but helped by the strong furrow above and below this pillar. H. 0·42. B. 0·3. Penultimate whorl, height 0·13. Mouth, height 0·3, breadth 0·16.

This species is very peculiar in the squareness of its outlines, arising from an oblique lateral compression. When the shell is laid on its face, a very slight angulation at the middle of the mouth is the only thing which breaks the whole basal profile. It has a slight resemblance to the young of *Natica islandica*, Gm., especially in the form of the spire; but is very obviously different, being more compressed, with a much broader and shorter base.

9. *Natica amphiala*,[1] Watson (Pl. XXVII. fig. 6).

Natica amphiala, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 260.

Station 169. July 10, 1874. Lat. 37° 34′ S., long. 179° 22′ E. North-east from New Zealand. 700 fathoms. Blue mud. Bottom temperature 40° Fahr.

Shell.—Thick, depressedly globose, with a small scalar, rather elevated spire, and a narrow obliquely pointed base; pale yellow, umbilicated. *Sculpture:* Longitudinals—there are many fine close-set lines of growth. *Spirals*—there are a few faint traces of obsolete lines and furrows; there is a slight angulation round the mouth of the umbilical pore. *Colour* is slightly brownish yellow, but is pure porcellanous white below the *epidermis*, which is thin, slightly puckered, smooth, not glossy, persistent. *Spire* short, but abrupt and scalar. *Apex* seemingly rather large, but abraded. *Whorls* 4–5, narrow, flatly rounded, of gradual increase to the last, which is disproportionately large, especially toward the mouth. *Suture* strong, slightly channelled,

[1] ἀμφίαλος, sea-girt.

almost quite horizontal. *Mouth* large, oval, very little oblique, and rather straight, scarcely pointed above; it is more than two-thirds of the whole height. *Outer lip* sharp, but strong, patulous throughout. *Inner lip* straightish, but slightly concave in its whole length; it is expanded on the labial callus, which is thick, but has no labial nor umbilical pad; the front of the pillar is thickened and flattened back on the very indistinct circumumbilical carina. *Umbilicus* is a rather coarse, pervious, smallish, round hole, hardly encroached on at all by the inner lip; it is barely funiculate. *Operculum* membranaceous, thinnish, of a yellow colour, with a dark-maroon outer edge which does not quite coil in to the centre. H. 0·27 in. B. 0·25. Penultimate whorl, height 0·07. Mouth, height 0·21, breadth 0·17.

This species combines a flattened globose form with a prominent pointed base and a small raised scalar spire, in a way that is very peculiar, so much so, indeed, that it almost recalls an *Amphibola*. *Amphibola tenuis*, Gray, in particular, has features of resemblance. It very slightly resembles *Natica nana*, Möller, from Greenland; but the body-whorl is more depressed, the spire is more exserted, and the umbilicus is not closed, as in that species.

Professor Hutton, in his revision of the Mollusca of New Zealand (Proc. Linn. Soc. New South Wales, 1884, vol. ix. p. 934), which he has kindly sent me, has identified this species with his *Natica vitrea*. How he has ascertained their identity I do not know, as he has not seen the Challenger specimens, nor even the figures of them, and I dare not flatter myself that the description has been so graphic as to have secured beyond a doubt the recognition of the shells.

10. *Natica atypha*,[1] Watson (Pl. XXVII. fig. 2).

Natica atypha, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 254.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, south-west of Papua. 28 fathoms. Green mud.

Shell.—Depressedly conically globose, umbilicate, spire little exserted, smooth, of a pale faintly ruddyish-white, with an obscure broad rusty band above the periphery. *Sculpture:* Longitudinals—there are many slight, hair-like, faintly sinuous lines of growth, which towards the suture are gathered into puckerings, and become stronger towards the umbilicus. Spirals—the whole surface is very faintly superficially and unequally furrowed, and is also slightly microscopically and regularly scratched. Within the umbilicus, but finally running out with a twist to the point of the pillar, is an indistinct and blunt circumumbilical carina. *Colour* ivory-white, with a faint tinge of buff, hardly glossy; from the periphery to within one-third of the whole distance to the suture there extends a broad, pale ruddyish-purple band, whose colour deepens on the spire to the apex. *Epidermis:* none visible. *Spire* short, the separate whorls being little prominent. *Apex* rather large and tumid, but depressed. *Whorls* 4¾, the first 1¾

[1] ἄτυφος, unpretending.

of which are embryonic; they are well-rounded and tumid, of slow and regular increase. *Suture* nearly horizontal, but more oblique towards the mouth, not deep, but slightly channelled. *Mouth* slightly oblique, nearly semicircular, but a little pointed above, about three-fourths of the total height, open, slightly angulated at the umbilical carina, pure white within, but with a very faint tinge of rust at the band. *Outer lip* open, thickish and blunt, a little flattened above where it leaves the body-whorl; its curve is very equable throughout. *Inner lip* porcellanous white, straight, little oblique, reverted, thickish, with a minute ledge within the edge of the mouth; its upper corner has a largish, slightly projecting pad, with a slight shallow channel between it and the edge of the outer lip; below this pad the inner lip slightly retreats, but at the large white pad which fills the upper part of the umbilicus it advances very prominently, with a strongly defined edge; below this pad it retreats sharply to the pillar, forming a nick on the left side of the pillar; below this it is again thickened and expanded at the umbilical carination. *Umbilicus* funnel-shaped, narrowed rather than defined by the umbilical carina; it is half concealed and within reduced to a mere pore by the heavy twisted umbilical pad. H. 0·43 in. B. 0·45. Penultimate whorl, height 0·11. Mouth, height 0·35, breadth 0·26.

This species resembles *Natica phytelephas*, Reeve, from Australia; but in that species the spire is not so much exserted, the umbilicus is open, circular, pervious, and spirally lirate. It is perhaps nearest to *Natica plicatula*, Nuttall, from China, but is much more depressed, has the earlier whorls smaller, and though the umbilicus is like it is much larger though more closed by the interior pad. *Natica raynoldiana*, Recl., has (?) the same kind of umbilicus, but the front of the body-whorl is shorter and the apex is much finer.

11. *Natica effossa*,[1] n. sp. (Pl. XXVIII. fig. 3).

Station 161. April 1, 1874. Lat. 38° 22′ 30″ S., long. 144° 36′ 30″ E. Port Philip, Melbourne. 33 fathoms. Sand.

June 3, 1874. Port Jackson, Sydney. 30 to 35 fathoms.

Shell.—Small, very thin, smooth, white, oblique, with a somewhat raised scalar spire, a large blunt apex, with a wide, deeply excavated suture and a small pervious umbilicus, with a low-set feeble spiral callus. *Sculpture:* Longitudinals—there are close-set fine hair-like lines of growth. Spirals—there are very superficial scratches and occasional feeble lines over the whole surface, the scratches are distinct on the base and strong within the umbilicus. *Colour* semi-transparent porcellanous white. *Epidermis:* none visible. *Spire* rather raised, scalar. *Apex* large, but flattened on the very top. *Whorls* 4 in all, of rapid increase, the last is tumid; the embryonic nucleus has $1\frac{1}{2}$ whorls, but,

[1] The name was suggested by the excavated suture.

except by the dividing line, is unrecognisable from the rest of the shell; the base is round, produced and oblique. *Suture* horizontal, deeply and strongly channelled, with a sharp edge below the channel. *Mouth* rather straight, semicircular. *Outer lip* sharp, freely curved, a little inverted above and patulous below. *Inner lip* oblique, direct and flat, a little concave; its attachment to the body is very short indeed; it is there somewhat broadly reverted, in the middle it is but slightly so; below at the pillar-point where the umbilical callus twists out it is again broader. *Umbilicus* is small but open, being very little covered by the inner lip; a narrow, sharpish, but small callus, very low placed, comes coiling down very steeply and forms the point of the pillar, and has a rather strong furrow below it, emarginating the lip edge slightly. H. 0·28 in. B. 0·24. Penultimate whorl, height 0·07. Mouth, height 0·2, breadth 0·15.

I do not know any species of *Natica* with which to compare this: making allowance for the umbilicus, for the thinner shell, for the lower spire, for the broader form, and for the deeper suture, *Natica islandica*, Gm., is as like as any. It strangely recalls some of the genus *Amphibola*, such for instance as *Amphibola fragilis*, Lam., or *Amphibola tenuis*, Gray, or *Amphibola burmana*, Blandford.

12. *Natica insularum*, n. sp. (Plate XXVIII. fig. 2).

Station 192. September 26, 1874. Lat. 5° 49′ 15″ S., long. 132° 14′ 15″ E. Ki Islands, south-west of Papua. 140 fathoms. Blue mud.

Shell.—Light, globose, umbilicate, with a blunt scalar spire, and a large slightly oblique mouth, a polished, finely striated surface of a rich creamy white colour, barred with two broad, interrupted, purply chestnut spiral bands. *Sculpture:* Longitudinals—the whole surface is scored with much-curved hair-like lines of growth, which below the suture are strongish. Spirals—there are close-set, fine, crimped, flexuous, scratch-like markings, with very obsolete small furrows; below the suture is a broadish, shelving, flat or slightly concave shoulder, very obscurely defined by an obsolete angulation; the lip of the umbilicus is formed by a broad, flat, very feeble cord. *Colour:* a subochraceous or rich creamy white, the colour being slightly richer below the suture; there are two widely separated bands of angular, distant, purply chestnut spots. Of these bands the upper, composed of much the largest and most distant spots, lies a good way above the periphery; the other, which is a narrower band, lies somewhat more remote below. *Epidermis*—none remaining. *Spire* short, broad, conical, scalar. *Apex* small, polished, pale chestnut, barely prominent; it consists of 2¼ whorls. *Whorls* 6 in all, tumid, well-rounded; the last is very large. *Suture* strongly marked, very slightly channelled. *Mouth* little oblique; though the pillar is slightly so, somewhat semicircular, open, white within, except for the stains of the external bands which shine through the shell. *Outer lip* (a good deal chipped): it is very slightly flattened above; below this its curve is very regular throughout.

Inner lip: pure white, oblique, direct, with a flattish, slightly patulous face, behind which it has an obsolete furrow and a ridge on the edge; it is joined above to the outer lip by a thin, slightly expanded callus; below this, where it leaves the body-whorl, it is deeply hollowed but strong; lower still it is greatly thickened and expanded by the junction to it of the umbilical callus; at the point of the pillar it is thick and patulous. *Umbilicus:* the upper part is small, but open and pervious; the lower part of it is choked by a strong ivory-white twisted callus, below which is a distinct but shallow furrow forming the upper side of the slight, broad cord, which faintly defines the umbilicus; there are no intra-umbilical ridges or furrows to speak of. H. 1·17 in. B. 1. Penultimate whorl, height 0·25. Mouth, height 0·93, breadth 0·57.

This fine species somewhat resembles *Natica tæniata*, Menke, but is higher spired and wider mouthed; the colouring, too, is different. *Natica articulata*, Phil., which has a more raised spire, is a more elongated shell, with a more oblique suture; in it, too, the colouring is different. This species reached me at so late a period that I had no opportunity of comparing it with the specimens preserved in the British Museum, but Mr E. A. Smith, who kindly compared it for me, assures me that it is different from any species there represented.

13. *Natica leptalea*,[1] Watson (Pl. XXVII. fig. 7).

Natica leptalea, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 261.

Station 23. March 15, 1873. Lat. 18° 24′ N., long. 63° 28′ W. Off Sombrero Island, St Thomas, Danish West Indies. 450 fathoms. Pteropod ooze.

Shell.—Delicate, depressedly globose; spire slightly scalar, but with a flat round apex, thin, smooth and glossy, ivory-white, umbilicated. *Sculpture:* Longitudinals—very delicate hair-like lines of growth. Spirals—the whole surface is covered with very faint, minute, and superficial lines and furrows, complicated with sharper wavy microscopic scratches; the two so run into one another that it is difficult to say how far they are distinct, only they are so. *Colour* uniform ivory-white. *Epidermis:* none visible. *Spire* rises in a series of rounded steps from the inferior whorls. *Apex* large, but depressedly rounded. *Whorls* 4¼; the first 1¼ are embryonic, tumid, and equably rounded, of rather rapid increase. *Suture* very little oblique, slightly channelled. *Mouth* very oblique, roundly oval to circular, with a flattening of the left side; its height is rather more than five-sevenths of the whole height. *Outer lip* open and well rounded throughout its whole sweep; its edge is thin. *Inner lip* is flatly curved; it spreads thinly across the body, is thinly reverted on the umbilicus, which it narrows but does not close, retreating at this point gradually to the pillar, where it is slightly nicked by the intraumbilical furrow; below this it is a little thickened and reverted throughout the length of the pillar. *Umbilicus*, which is small and funnel-shaped at its mouth, is not

[1] λεπταλέος, delicate.

defined by any carina; within it is a slight furrow, and a broad, flat, scarce appreciable cord; it is half covered by the reverted lip, and contracts at once to a mere pore. H. 0·35 in. B. 0·33. Penultimate whorl, height 0·11. Mouth, height 0·26, breadth 0·2.

This species resembles some of the more flattened forms of the young of *Natica montagui*, Forbes; but than that species this is less globose, more depressed, with a higher, shorter, blunter spire, the apex of which has much coarser whorls; the mouth is much larger, more circular, and is not obliquely turned in under the base of the body-whorl, as it comparatively is in *Natica montagui*. The umbilicus, too, is less open, and there is no trace of the umbilical pillar and superior furrow of that species. Than *Natica bulbosa*, Reeve, this species is rounder in the mouth, higher in the spire, and opener in the umbilicus.

14. *Natica philippinensis*, Watson (Pl. XXVII. fig. 1).

Natica philippinensis, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 252.

Station 210. January 25, 1875. Lat. 9° 26′ N., long. 123° 45′ E. Philippines. 375 fathoms. Blue mud. Bottom temperature 54°·1.

Shell.—Rather depressedly but conically globose, umbilicate, thickish, slightly ribbed and spirally striate, yellowish, with rounded prominent whorls, and with a brownish band above the periphery. *Sculpture:* Longitudinals—the upper whorls are closely crossed by numerous riblets, whose front edge is sharp; they are strongly convex in front, especially near the top of the whorl; on the last whorl these become feeble, especially at the periphery; besides these there are slight, close-set, rounded striæ on the lines of growth. Spirals—the whole surface is scored by faint irregular and unequal furrows and microscopic lines; there is a twisted, prominent, but blunt umbilical carina. *Colour* porcellanous white under the yellow epidermis, with a broad buff band which extends from the periphery half-way to the suture. *Epidermis* yellow, thin, glossy, but roughened by longitudinal folds. *Spire* short, but raised. *Apex* very small, prominent, but the extreme tip scarcely rises into view. *Whorls* 6 (of which the first three are embryonic and of a faint brownish-purple), tumid, well rounded, of rapid increase. *Suture* nearly horizontal, deep, almost channelled. *Mouth* not much oblique, a little gibbously semicircular, slightly more than three-fourths of the whole height of the shell, open, slightly and bluntly angulated at the point of the pillar, pure white within, but where the buff spiral band lies there is a slight ruddy tinge, deepening to a rusty stain towards the edge of the lip. *Outer lip* a little contracted above, and there faintly flattened; it curves very equably throughout its whole sweep; it is open, but with a straight sharp edge, and projects bluntly at the extreme point of the shell, where the umbilical carina joins it. *Inner lip* pure white, straight, oblique, flat, and obsoletely channelled within, with a slightly thickened rounded edge; it is joined above to the outer lip by an expanded but not very large nor thick callus; below this, where it leaves the body-whorl, it is thin and hollowed

out, but below the middle of the umbilicus it is thickened by a prominent umbilical callus; below this it is slightly more reverted and thicker than above, and it is very obtusely angulated towards the point of the pillar. *Umbilicus*, which is defined by the basal carination, is deep; in consequence of the thinning and hollowing out in the inner lip above and of a strong furrow between the umbilical callus and the basal carina, it looks as if it were large, but it is contracted by the low-lying and strongish spiral callus within. H. 0·67 in. B. 0·6. Penultimate whorl, height 0·16. Mouth, height 0·505, breadth 0·407.

This species is very like the young of *Natica rufa*, Born, from Singapore; but it is higher in the spire; the umbilical pad, which is white, not brown as in that other, is also smaller, lower in position, and separated distinctly from the pad at the upper angle of the mouth; the radiating wrinkles on the upper whorls are much stronger and more regular, and the embryonic apex is very much smaller, sharper, and more distinctly defined. *Natica vittata*, Gm., which in other respects is quite different, has the same pillared umbilicus with carinated edge, a feature, however, not unusual in the genus.

15. *Natica psila*,[1] n. sp. (Pl. XXVIII. fig. 1).

Station 142. December 18, 1873. Lat. 35° 4′ S., long. 18° 37′ E. Off Cape of Good Hope. 150 fathoms. Green sand. Bottom temperature 47°.

Shell.—Small, thin, smooth, white, oblique, with a slightly raised spire, a small apex, an impressed suture, a largish mouth, a thin outer lip, a thickened, rounded, inner lip, and a smallish pervious umbilicus, within which is a broadish but inconspicuous spiral callus. *Sculpture:* Longitudinals—there are feeble hair-like striæ on the lines of growth. Spirals—the whole surface is faintly scored with very minute and quite superficial lines. *Colour* a waxy white. *Epidermis:* there are traces of a very thin grey membranous epidermis. *Spire* short, bluntly conical. *Apex* small. *Whorls* 4½, slightly convex, with a slight contraction a little way below the suture. *Suture* almost horizontal, impressed, subchannelled. *Mouth* small, very perpendicular, semicircular; the upper corner is filled up by a callus. *Outer lip* thin but blunt; it retreats a little throughout its whole course; its curve is very steady, but is a little more flattened above than towards the base. *Inner lip* very slightly oblique, direct from the insertion of the outer lip to below the umbilicus; there is a thick callus above in the corner of the mouth and on the body; it is reverted at the umbilicus, towards the front of which it is slightly excavated; it is strong and broad throughout. *Umbilicus* is small but pervious, and very little contracted within, though a broad but inconspicuous callus coils up within it; below this umbilical callus is a shallow furrow. H. 0·37 in. B. 0·38. Penultimate whorl, height 0·1. Mouth, height 0·31, breadth 0·16.

This species is a good deal like a young *Natica sordida*, Phil., but is obviously quite distinct.

[1] ψιλός, rubbed.

16. *Natica pseustes*,[1] Watson (Pl. XXVII. fig. 3).

Natica pseustes, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 255.

July 1874. Levuka, Fiji. Shallow water.

Shell.—Rounded, with no angulation in the whole contour, obliquely depressedly globose, with spire scarcely projecting, thin, smooth, glossy, porcellanous white, with a zone of large chestnut irregular spots below the suture; the umbilicus and pillar are uniformly stained with the same colour. *Sculpture:* Longitudinals—there are many delicate hair-like lines of growth, which are strongest and most crowded near the suture and round the umbilicus. Spirals—there is a very faint appearance of rounded threads and furrows, one of which below the suture is a little stronger than the rest; besides these the surface is densely, delicately, sharply, microscopically scratched; these scratches are strongest on the upper part of the last whorl near the mouth, where their intersection with the lines of growth produces a very delicate sharp cross-hatching. The centre of the base has a scarce perceptible carination, which becomes stronger just behind the point of the pillar; within this carination is a strong but shallow umbilical furrow, which deeply cuts in on the pillar, and curves round the base of the strong pad which chokes up the umbilicus. *Colour* semi-transparent, porcellanous white, which becomes a dead white round the umbilicus and also in a broadish band below the suture; this white band is flecked with irregular, sharply defined, ruddy chestnut spots; a stain of this colour in a lighter shade suffuses the whole umbilicus and pillar: the rest of the shell is covered with a delicate network of fine, sharply defined light-chestnut lines; amidst this network are two or three spiral zones, where the brown lines are sparser and pale lanceolate spots appear. *Epidermis*: none visible. *Spire* scarcely raised, but just perceptibly conical. *Apex* rather large, with the extreme rounded tip appearing at the highest point of the shell. *Whorls* $4\frac{3}{4}$ (of which the first $2\frac{1}{4}$ are embryonic and glassy), very flatly rounded, of rather slow increase. *Suture* almost horizontal and very slight. *Mouth* very oblique, semicircular, but pointed above and rounded below, with a slight angulation at the front of the pillar; the filling up of the superior corner by the labial pad equalizes the two extremities and reduces the opening to an unequal-sided oval; its entire height is about $\frac{10}{11}$ of the whole height of the shell; it is open, transparent porcellanous white within. *Outer lip*: it advances slightly on leaving the body-whorl, but beyond the pad retreats a very little, and from this point its whole curve is very equable; its edge is blunt and rounded. *Inner lip* very slightly concave; at the upper angle of the mouth it is formed by a thick transparently porcellanous pad, which is faintly tinged with chestnut: this pad projects beyond the plane of the mouth in a point, which is separated from the outer lip by a little triangular depression; it is continued with an uneven surface across the body, and unites with the pad which closes the upper part of the umbilicus, and is connected with the great chestnut-coloured spiral buttress which chokes up the umbilicus,

[1] ψεύστης, a deceiver.

below which the narrow umbilical furrow cuts deeply into the thickness of the pillar, whose edge is bevelled off from without and from within; towards its point the pillar is thickened by the feeble circumumbilical carina, which is rather suddenly developed and made distinct at this point. *Umbilicus* consists only of the channel or gutter, which twists round the pillar callus and disappears behind it. H. 0·327 in. B. 0·36. Penultimate whorl, height 0·075. Mouth, height 0·29, breadth 0·16.

Brazier, in the "Chevert" Exped. Marine Shells (Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 237) gives what is, I suppose, this species under the name of *Lunatia variabilis*, Recluz, and ascribes as its habitat North and North-East Australia and New Caledonia, 5 to 30 fathoms. In the British Museum there is a *Natica* presented by McAndrew, and in his handwriting and initialed by him it is attested to come from Suez; probably it was his own dredging there (see his Report on Suez Dredgings, Ann. and Mag. Nat. Hist., 1870, vol. vi. p. 437). It bears the name *Natica marmorata*, H. Adams.[1] With that shell the Challenger species described above is identical. But *Natica marmorata*, H. Adams (Proc. Zool. Soc. Lond., 1869, p. 274, pl. xix. fig. 8), is certainly a mere synonym for *Natica variabilis*, Recl.; and consequently the present species, which has hitherto passed for Adams's *Natica marmorata*, requires both an individual name and a description, for it is beyond doubt distinct, though at first sight deceptively like, and, indeed, from this very fact the name proposed for it is borrowed.

Compared with *Natica variabilis*, Recl., *Natica pseustes* is a broader and flatter shell, with a more depressed spire; the apex is blunter, the embryonic whorls are 2¼ instead of 3, and are larger. Its coloration is very like that of *Natica variabilis*, especially in the white band with large chestnut spots below the suture; but it has these spots less confluent, more ruddy, and there is none of the purple tinge on the spire which is traceable in that other. The coloured ornamentation in *Natica pseustes* is a distinct network of minute, sharply defined, delicate lines, amidst which occur two or three spiral zones of lanceolate white spots where the brown lines are fewer. In *Natica variabilis*, on the other hand, this coloured ornamentation is rather a mass of confused blotchy stains, with one or two spirals of brown arrow-heads parted by little white dots. There are very many other minute differences; but perhaps the best distinctive feature of all is that, when looked at perpendicularly to the centre of its axis, with the shell on its mouth and the base toward the observer, the oblique line of the base is in *Natica pseustes* quite continuous and unbroken, while in *Natica variabilis* in all stages of growth this basal line is abruptly interrupted by the projection of the pillar and the sweep of the basal lip.

As this sheet is passing through my hands for final revision, I have been enabled, through the kindness of Mr Alfred Hands Cooke, M.A., curator in Zool. Mus. Cambridge, to examine McAndrew's own specimens, dredged by himself, and marked "*Natica marmorata*, H. Ad., Gulf of Suez." Several of these specimens retain their operculum, which is so absolutely identical with the operculum of *Natica variabilis*, Recl., from Madeira and Tenerife, that my estimate of the distinctness of the two species is very much shaken.

17. *Natica xantha*,[2] Watson (Pl. XXVII. fig. 8).

Natica xantha, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 262.

Station 150. February 2, 1874. Lat. 52° 4′ S., long. 71° 22′ E. Between Kerguelen and Heard Island. 150 fathoms. Coarse gravel. Bottom temperature 35°·2.

[1] McAndrew in his Report (*loc. cit.*) gives "H. Adams" as his authority for this identification, but adds that "Mörch questions the species being identical." The identification being erroneous, McAndrew's citation of the Canaries for the Suez species must be suppressed.

[2] ξανθός, yellow.

Shell.—Strongish, conically globose, slightly pointed below at the base of the mouth, glossy, bright yellow, but whitish around the umbilicus, which is a mere cleft. *Sculpture:* Longitudinals—there are very slight, rather unequal, hair-like lines of growth. Spirals—the surface is covered as usual with extremely faint superficial wavy lines and furrows, besides which is a system of still more superficial microscopic sharp straight scratches, which it is very difficult to see at all. *Colour* pure porcellanous white under the brilliant yellow epidermis, which is very thin, glossy, and rather persistent. *Spire* high, but blunt at the top, which is somewhat eroded. *Apex* large, bluntly rounded. *Whorls* 4, the first one is large, and the shell increases very regularly; they are tumid and regularly rounded, and rise high above the succeeding ones; there is a slight and narrow swelling below the suture, with a very slight and shallow compression of the shell below this swelling. *Suture* channelled, but not broadly nor deeply so; it is considerably and increasingly oblique. *Mouth* large, open, broadly oval, with a slight flattening of its curve on the left side; its upper corner is very accurately rectangular. *Outer lip* open but not very patulous, and is a most regular curve in its whole sweep, which passes almost without change into the curve of the pillar. *Inner lip* is very slightly concave, till towards the front of the pillar it curves round to the right to meet the outer lip; a very slight pad fills up the upper edge of the mouth, a very thin transparent and straight-edged callus carries it across the body; over the umbilicus it is slightly thickened and a good deal reverted; at the point of the pillar, where it becomes adherent, it is encroached on very slightly by a small furrow, which runs out of the umbilicus parallel to the pillar; below this point the lip has a narrow, rounded, and expanded edge. H. 0·54 in. B. 0·47. Penultimate whorl, height 0·23. Mouth, height 0·42, breadth 0·3.

This *Paludina*-like form resembles no *Natica* known to me. It is intermediate between *Natica affinis*, Gm., and *Natica grönlandica*, Beck, but is narrower, longer in the last whorl, and higher in the spire than the most exceptional forms of *Natica affinis*, Gm., var. *clausa*, Brod. and Sow. Philippi, in Küster's Conch. Cab., reproduces (pl. vii. fig. 1) *Natica limbata*, d'Orb., Patagonia, and (pl. vii. fig. 2) *Natica isabelleana*, d'Orb., from South America, which vaguely have somewhat of the same features, and his *Natica tenuis*, pl. xiv. fig. 3, has such too: but these are species I do not remember to have seen, and none of the descriptions apply.

18. *Natica fartilis*, Watson (Pl. XXVII. fig. 10).

Natica fartilis, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 264.

Station 145. December 27, 1873. Lat. 46° 43′ S., long. 38° 4′ 30″ E. Between Marion Island and Prince Edward Island. 50 to 140 fathoms. Volcanic sand.

Station 149c. January 19, 1874. Lat. 49° 32′ S., long. 70° E. Balfour Bay, Royal Sound, Kerguelen. 60 fathoms. Volcanic mud.

Station 150. February 2, 1874. Lat. 52° 4′ S., long. 71° 22′ E. Between Kerguelen and Heard Island. 150 fathoms. Coarse gravel. Bottom temperature 35°·2.

Shell.—Globose, with a rather high spire and a somewhat elongated and pointed base, thin, with a delicate light-green epidermis; umbilicus closed. *Sculpture:* Longitudinals—the lines of growth are fine, hair-like, close-set striæ. Spirals—the surface is somewhat distinctly, though finely, scored with shallow furrows and faint lines, which are microscopically crimped; below the suture the whorls are compressed by a broad very shallow furrow, the lower side of which is very doubtfully angulated. *Colour* porcellanous white under the delicate, slightly glossy epidermis, which is pale green, streaked on the lines of growth with darker green; the umbilical pad, pillar, and inside are dead white. *Epidermis* is a thin, rather persistent smooth membrane. *Spire* is rather high and conical. *Apex* rather large, raised so that the extreme tip projects, but rounded though not flattened. *Whorls* 6 (of which the first $1\frac{1}{2}$ are embryonic); they are scarcely rounded between one suture and the next, with a slight and narrow margin below the suture, then very slightly compressed; the last is very large and tumid in proportion to the rest, which project very little above it; they are of slow and very regular increase to the last, which quite swallows up all the others. *Suture* nearly horizontal, small, not at all impressed, but very distinct, being slightly channelled, and being defined by the small margin and compression of the whorl below it. *Mouth* large but not very open, semicircular, oblique, almost right-angled above, rounded below; the swell of the body-whorl is just perceptible within; its height is more than seven-ninths of the whole height. *Outer lip* very regular all the way round, its edge is thin. *Inner lip* a little flexuous; the upper corner of the mouth is filled up with a thinnish but broad pad, whose edge crosses the body in a slightly concave line; below the umbilicus, which it completely covers, it is contracted in on the pillar, which is reverted and thickish, but bevelled to a narrow rounded edge. *Operculum* testaceous, scored with slightish radiating lines; the spire is membranaceous, being left uncovered by the limy coat; but the one specimen which preserves the operculum is a young shell. H. 0·9 in. B. 0·75. Penultimate whorl, height 0·19. Mouth, height 0·73, breadth 0·52.

This species so closely approaches *Natica affinis*, Gm. (=*Natica clausa*, Brod. and Sow.), that I have hesitated very much to separate them, and have been glad to be strengthened in so doing by the opinion of Prof. v. Martens and of Mr E. A Smith. *Natica fortilis* is more globose, higher in the spire, longer and more pointed in the base, and less obliquely transverse in its outline; its apex is larger and slightly more prominent. *Natica globosa*, King, from Magellan, like this in form, is umbilicated, and has a thin operculum.

19. *Natica* (*Lunatia*) *grönlandica*, Beck.

Natica pusilla (not Say), Gould, Inverteb. Massachusetts, 1841, p. 237, fig. 166, and (ed. Binney) p. 341, fig. 611 (*Lunatia*).

„ *grönlandica*, Beck in Möller's Index Moll. Grœnl., 1842, p. 7.

„ *alba*, Philippi, Abb. und Besch., vol. i. p. 16, pl. i. fig. 13, and (*Natica pusilla*) vol. ii. p. 42, pl. ii. fig. 9.

Natica pusilla, De Kay, Nat. Inst. New York, p. 123, pl. vii. fig. 145.
„ *livida*, Bean in Thorpe's Brit. Mar. Conch., p. 265.
„ *gouldii*, Philippi, 1845, Zeitschr. f. Malak., p. 77.
„ *grœnlandica*, Searles Wood, Crag Moll., Pal. Soc., vol. i. p. 146, sp. 10, pl. xii. fig. 5.
„ *grönlandica*, Lovén, Index Moll. Scand., p. 17.
„ *pusilla*, Philippi, Conch. Cab. (ed. Küster), p. 88, No. 100, pl. xiii. fig. 5 (not pl. xv. figs. 10, 11).
„ *greenlandica*, Reeve, Conch. Icon., vol. ix. pl. xxi. fig. 96.
„ *pusilla*, Forbes and Hanley, Brit. Moll., vol. iii. p. 341, pl. c. fig. 7.
„ *grœnlandica*, J. G. Jeffreys, Brit. Conch., vol. iv. p. 216, vol. v. pl. lxxviii. fig. 2.
Lunatia grønlandica, G. O. Sars, Moll. Arct. Norv., p. 158, pl. xxi. fig. 15.
Natica grœnlandica, Sowerby, Thes. Conch., pts. 39, 40, p. 96, sp. 129, pl. ccccIxii. (ix. *Gen.*), fig. 140.
Lunatia pallida, Dunker, Ind. Moll. Mar. Japon., p. 61.
Natica pallida, Gwyn Jeffreys, Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1885, p. 29, sp. 2.

Station 151. February 7, 1874. Lat. 52° 59′ 30″ S., long. 73° 33′ 30″ E. Heard Island, S.S.E. of Kerguelen. 75 fathoms. Volcanic mud.

Habitat.—Greenland (Möller), and Norway (Reeve), and United States north coast, also the Cattegat (Philippi); Great Britain, south to the Dogger Bank, Ostend; 2 to 1290 fathoms (Jeffreys).

Fossil.—From the older glacial clays of Norway (Sars); and of Scotland, Sweden, Iceland, and North America (Jeffreys); the English Crag (Wood). 0 to 400 feet.

On comparing this *Natica* with G. O. Sars' specimens from Norway I am not quite satisfied, and yet I cannot part them. The Kerguelen specimen has a smoother, more ivory-like surface, is stronger, the spire is more depressed and has a more truly conical outline; the apex is more sunken, the whorls are flatter, the body-whorl below the suture is slightly hollowed, the pad on the inner lip is larger, and the umbilicus is more completely closed than it is in any specimen of the Arctic species I have seen; but *Natica grönlandica* varies in all these respects, and the study of that species leaves the impression that the differences I have mentioned above might be found filled up. Still, it was unsatisfactory to put a Kerguelen shell to an Arctic species without fuller conviction, and I was glad, therefore, to have my determination of the species confirmed by Mr E. A. Smith. The thin horny operculum, too, has precisely the microscopical short curved scratch-like lines which are a well-known feature in *Natica grönlandica*.

Dr Gwyn Jeffreys (*loc. cit. supra*) identifies *Natica grönlandica*, Beck, with the *Natica pallida* of Brod. and Sow. (Zool. Journ., vol. iv., 1828, 1829, p. 372), but I cannot follow him here. It is quite possible that the *Natica pallida* of Gray (Beechey's Voyage "Blossom," pl. xxxiv. fig. 15, without description), of Middendorff (Malac. Ross., vol. ii. p. 93), and of Philippi (Conch. Cab., ed. Küster, p. 96, sp. 100, pl. xiv. fig. 2), may be *Natica grönlandica*, Beck, though all three authors assert the contrary; but of the correctness of Gray's identification of the "Blossom" species as that of Broderip we have no evidence, Broderip's type having disappeared, and the original description having no figure, and being so absolutely featureless that it might apply to anything. Dr Gwyn Jeffreys himself says that he had been "inclined to doubt whether it might not be *Natica islandica*." The state of the case is this. Some shells called *Natica pallida*, Brod. and Sow., are *Natica grönlandica*, but whether they really are Broderip and Sowerby's species no one can tell.

20. *Natica* (*Lunatia*) *prasina*, Watson (Pl. XXVII. fig. 9).

Natica prasina, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 263.

Station 149C. January 19, 1874. Lat. 49° 32′ S., long. 70° E. Balfour Bay, Royal Sound, Kerguelen. 60 fathoms. Volcanic mud.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Shell.—Conically globose, rather high in the spire, with umbilicus closed, thin, with a pale green roughish epidermis. *Sculpture:* Longitudinals—there are on the lines of growth slight puckerings of the fibrous epidermis. Spirals—there are some slight, open, irregular and unequal furrowings of the surface, with microscopic scratchings. *Colour:* a pale buff colour below the dull greenish epidermis, which is fibrous, thin, easily rubbed through, but persistent. *Spire* more or less high, the whorls rising very considerably above each other in high rounded steps. *Apex* extremely large for the size of the shell, but not prominent, being rounded, with the extreme tip sunk in and generally eroded. *Whorls* 5, of which about $1\frac{1}{4}$ are embryonic; they are globose, and increase regularly and slowly. *Suture* deep, very slightly channelled, straight, but towards the end a little oblique. *Mouth* large, open, circularly oval, little oblique, right-angled above, fully rounded below, with a scarcely perceptible angulation towards the point of the pillar, slightly flattened on the inner lip; its height is nearly seven-ninths of the whole height. *Outer lip*—leaving the body-whorl at a right angle, it sweeps round very fully and regularly to the pillar; it is thin. *Inner lip* a little hollowed, with, on the body, a very slight projection; there is scarcely any pad at the upper corner of the mouth, and the callus is very thin on the body; above and at the umbilicus it is thinly and somewhat broadly reverted, so as quite to conceal the opening, or to leave at most a mere chink; at the pillar it narrows, and there is at this point a slight transverse angulation; the pillar is the only part of the lip which is at all thickened, and that but slightly; the edge is reverted, rounded, and slightly bevelled back. *Operculum* is membranaceous, thin, with a distinct and slightly impressed suture, and scored with sharp radiating lines. H. 0·64 in. B. 0·53. Penultimate whorl, height 0·15. Mouth, height 0·49, breadth 0·47.

Natica globosa, King, from the Straits of Magellan, is somewhat like this, but has a much more depressed spire and longer mouth. Prof. v. Martens was good enough to compare this species for me with his *Natica grisea*, and from that he says "it differs (1) by being considerably larger, (2) thinner, (3) penultimate whorl less prominent, (4) the last whorl, when seen from the dorsal side, is higher or longer relatively to the breadth, (5) the umbilicus is narrower. I think, therefore, that it is a distinct species, and I see also no other in the Berlin collection which might be identical."

21. *Natica (Neverita) albumen* (Linne).

Nerita albumen, Linne, Syst. Nat. (ed. 12), p. 1252, No. 718 (*partim*).
Vitellus compressus, Chemnitz, Conch. Cab., vol. v. p. 276, pl. clxxxix. figs. 1924, 1925.
Nerita albumen, Dillwyn, Cat., vol. ii. p. 984, sp. 10.
" " Wood, Ind. Test., p. 178, pl. xxxv. fig. 17.
Natica albumen, Lamarck, Anim. s. vert., vol. vi. (2) p. 195, and (ed. Desh.) vol. viii. p. 628, sp. 3.
" " Deshayes, Encycl. méthod., vers, vol. iii. p. 598, sp. 2.
" " Philippi, Conch. Cab. (ed. Küster) p. 29, sp. 25, pl. iv. figs. 3, 4.
Nerita albumen, Hanley, Ipsa Linn. Conch., pp. 395, 542 (*Natica*).
Natica albumen, Reeve, Conch. Icon., vol. ix. pl. viii. fig. 31.
" " Sowerby, Thes. Conch., pts. 30, 40, p. 78, sp. 15, pl. ccccl viii. (v. *Gen.*) fig. 57.

August 16, 1874. New Hebrides. Shore.

Habitat.—The Philippines.

22. *Natica (Neverita) conica*, Lamarck.

Natica conica, Lamarck, Anim. s. vert., vol. vi. (2) p. 198, and (ed. Desh.) vol. viii. p. 637, sp. 7.
" " Philippi, Conch. Cab. (ed. Küster), p. 102, sp. 115, pl. xv. fig. 3.
" " Reeve, Conch. Icon., vol. ix. pl. xii. fig. 48.
" (*Neverita*) *conica*, Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 167, No. 68.
" *conica*, Sowerby, Thes. Conch., pts. 39, 40, sp. 78, pl. cccclvi. (iii. *Gen.*) fig. 25.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
April 26, 1874. Port Jackson, Sydney. 4 to 18 fathoms.

Habitat.—Australia, St. Vincent's and Spencer's Gulfs (Angas).

23. *Natica (Neverita) didyma*, Bolten.

Chemnitz, Conch. Cab., vol. v. p. 246, pl. clxxxvi. figs. 1856–59.
Natica didyma, Bolten MS.
" " Philippi, Conch. Cab. (ed. Küster), p. 6, sp. 1, pl. i. figs. 1–4.
" *papyracea*, von der Busch.
" " Philippi, Abb. und Besch., vol. ii. p. 45, sp. 12, pl. ii. fig. 14.
" " Philippi, Conch. Cab. (ed. Küster), p. 43, sp. 42b, pl. v. fig. 4.
" *bicolor*, Philippi, Zeitschrift f. Malak., 1848, p. 156.
" " Philippi, Conch. Cab. (ed. Küster), p. 43, sp. 42, pl. vi. fig. 4.
" *ampla*, Philippi, Zeitschrift f. Malak., 1848, p. 156.
" " Philippi, Conch. Cab. (ed. Küster), p. 41, sp. 40, pl. vi. fig. 2.
" *Chemnitzii*, Reeve [1] (from Recluz MS.), Conch. Icon., vol. ix. pl. ii. fig. 7.
" " Eydoux and Souleyet, "Bonite," vol. ii. p. 575, No. 168, pl. xxxv. figs. 4, 5.
" *Lamarckiana*, Reeve (from Recluz MS.), Conch. Icon., vol. ix. pl. ii. fig. 6.
" *Petiveriana*, Reeve (from Recluz MS.), Conch. Icon., vol. ix. pl. v. fig. 17.
" *problematica*, Reeve, Conch. Icon., vol. ix. pl. vi. fig. 21 (= *Natica intermedia*, Recluz, not of Philippi).

[1] Not the *Natica Chemnitzii*, Pfeiffer, which is *Natica maroccana*, Chem., var.

Natica Chemnitzii, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 198, No. 70.
„ *Lamarckiana*, Lischke, Jap. Meer. Conch., vol. i. p. 80.
„ *didyma*, Brazier, "Chevert" Exped. Mar. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 238, No. 59.
„ *Chemnitzii*, v. Martens, Moll. Mauritius, &c., p. 276.
„ *didyma*, Sowerby, Thes. Conch., pts. 39, 40, p. 77, sp. 7, pl. ccccliv. (i. *Gen.*), fig. 4.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—The whole Indian Ocean, in particular Madagascar, Ceylon, Nicobar Islands, Malay Archipelago, Australia (v. Martens); Bay of Bengal and "Hinterindien" (Philippi); New Guinea (Brazier); Sydney (Angas); Japan (Lischke).

At first sight the specific distinctness of the forms here classed as one species seems to receive strong support from the fact that both Philippi and Reeve have made four species of them, but in point of fact the numerical agreement is all that these two authors present, for it is impossible to correlate their species. Possibly the *Natica chemnitzii*, Recl., is equal to *Natica didyma*, Bolten, and with more probability *Natica petiveriana*, Recl., equals *Natica papyracea*, Von der Busch; but beyond that one can only guess, and after very full and patient examination of the different species and comparison of all the descriptions in Reeve and Philippi, Mr Edgar Smith and I were decidedly of opinion that, as indicated above, they must be united. These conclusions will be best shown by adding here a note with which Mr Smith has kindly favoured me as the result of our study.[1]

24. *Natica* (*Mamma*) *aurantia*, Lamarck.

Chemnitz, Conch. Cab., vol. v. p. 283, pl. clxxxix. figs. 1934, 1935.
Natica aurantia, Lamarck, Anim. s. vert., vol. vi. (2) p. 198, and (ed. Desh.) vol. viii. p. 632, sp. 6.
„ „ Deshayes, Encycl. méthod., vers, vol. iii. p. 599, sp. 6.
„ „ var. *straminea*, Recluz, Proc. Zool. Soc. Lond., 1843, p. 211.

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[1] "*Natica* (*Neverita*) *didyma*, Bolten.

Natica didyma, Bolten; Philippi, Küster's Conch. Cab., p. 6, pl. i. figs. 1–4.
„ *ampla*, Philippi, Zeitschrift Malak., 1848, p. 156, and Küster's Conch. Cab., p. 41, pl. vi. fig. 2.
„ *papyracea*, Von der Busch; Philippi, Abbildungen, vol. ii. pl. ii. fig. 14 (*junior*).
„ *lamarckiana*, Recluz MS., Reeve, Conch. Icon., vol. ix. pl. ii. fig. 6.
var. = *Natica bicolor*, Philippi, Küster's Conch. Cab., p. 43, pl. vi. fig. 4.
„ = *Natica petiveriana*, Recluz MS., Reeve, *loc. cit.*, sp. 17.
„ = *Natica chemnitzii*, Recluz MS., Reeve, *loc. cit.*, sp. 7.
„ = *Natica problematica*, Reeve, *loc. cit.*, sp. 21.
„ = *Natica intermedia*, Recluz, not of Philippi.
„ = *Natica incisa*, Dunker, Philippi in Küster's Conch. Cab., p. 81, pl. xii. fig. 8.

Habitat.—Gulf of Yedo. Also Philippines, China, North Australia, and New South Wales.

This species varies considerably in form and the extent of the umbilical callosity, which, however, displays a quite constant peculiarity in being subdivided by a more or less deeply transverse furrow. The umbilicus, too, is much more open in the typical form than in the var. named by Recluz *Natica chemnitzii*, but these differences are mainly individual, for in a series of forty-two specimens in the Museum, it appears impossible to draw a line of demarcation around any of the so-called species. Colour also is of no assistance, the chief variation consisting in the intensity of the tint of the aperture and the whiteness of the base."

Natica aurantia, var. *straminea*, Reeve, Conch. Icon., vol. ix. pl. vi. fig. 20, pl. ix. fig. 32.
„ „ Philippi, Conch. Cab. (ed. Küster), p. 34, sp. 30, pl. iv. figs. 13, 14, and (*Natica straminea*) p. 113, sp. 130, pl. xvi. fig. 3.
„ „ Issel, Malac. Mar Rosso, p. 187, No. 461, p. 285, No. 179.
Mamma straminea, Brazier, "Chevert" Exped. Mar. Shells, Proc. Linn. Soc. New South Wales, vol. i. 1877, p. 239, No. 64.
Natica aurantia, Sowerby, Thes. Conch., pts. 39, 40, p. 85, sp. 60, pl. ccccIv. (ii. *Gen.*), figs. 15, 16.

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ W. Off Nukalofa, Tongatabu. 18 fathoms. Coral mud.

Habitat.—Port Essington, north coast of Australia (Reeve); North-east Australia (Brazier); Red Sea (Issel).

Fossil.—On shores of Red Sea (Issel).

It is obvious that Philippi, though he separates *Natica aurantia* and *Natica straminea*, was very strongly inclined to believe they are but one species, as Deshayes (Lamarck, Anim. s. vert., vol. viii. p. 631, note) considers them. He expresses some doubt of this species being really distinct from *Natica mamilla*, Linne. I have under that species noted some easily recognisable marks of distinction.

25. *Natica* (*Mamma*) *draparnaudi*, Recluz.

Natica draparnaudi, Recluz, Journ. de conch., vol. ii. p. 198, pl. v. fig. 11.
„ „ Reeve, Conch. Icon., vol. ix. pl. xi. fig. 44.
„ „ Lischke, Jap. Meer. Conch., vol. ii. p. 74.
„ „ Sowerby, Thes. Conch., pts. 39, 40, p. 77, sp. 12, pl. ccccIx. (vii. *Gen.*) fig. 84.
Uber draparnaudii, Dunker, Index Moll. Mar. Japon., p. 62.

Station 208. January 17, 1875. Lat. 11° 37′ N., long. 123° 31′ E. Philippines. 18 fathoms. Blue mud.

Habitat.—Philippines (Reeve and British Museum).

In this species the apex, when quite fresh, is probably black or very dark brown. It differs from that of *Natica mamilla*, Linne (which is similar in colour), in being slightly larger, and the increase of the whorls is also markedly more rapid. Recluz, through some mistake, attributes this species to the Gulf of Mexico.

26. *Natica* (*Mamma*) *mamilla* (Linne).

Nerita mamilla, Linne, Syst. Nat. (ed. 12), p. 1252, No. 719.
Chemnitz, Conch. Cab., vol. v. p. 280, pl. clxxxix. figs. 1928, 1929.
„ „ Dillwyn, Cat., vol. ii. p. 984, sp. 17.
„ „ Wood, Ind. Test., p. 178, pl. xxxv. fig. 19.
Natica mamilla, Lamarck, Anim. s. vert., vol. vi. (2) p. 197, and (ed. Desh.) vol. viii. p. 630, sp. 4.
„ „ Deshayes, Encycl. méthod., vers, vol. iii. p. 599, pl. ccccliii. fig. 5.

Natica pyriformis, Recluz, Proc. Zool. Soc. Lond., 1843, p. 211, sp. 21.
„ *mamilla*, Philippi, Conch. Cab. (ed. Küster), p. 31, sp. 27, pl. iv. figs. 7, 8, and (as *Natica pyriformis*), p. 60, sp. 64, pl. ix. fig. 8.
„ „ Eydoux and Souleyet, "Bonite," vol. ii. p. 576, No. 172, pl. xxxv. figs. 16, 17.
Nerita mamilla, Hanley, Ipsa Linn. Conch., pp. 396, 542.
Natica mamilla, Reeve, Conch. Icon., vol. ix. pl. vii. fig. 27.
„ „ Deshayes, Moll. Réunion, p. 79, No. 230.
„ „ Sowerby, Thes. Conch., pts. 39, 40, p. 85, sp. 58, pl. ccccclvi. (iii. *Gen.*), figs. 28–30.
„ „ Issel, Mal. Mar Rosso, p. 186, No. 457, p. 285, No. 177.
„ „ v. Martens, Moll. Mauritius, &c., p. 276.
Uber mamilla, Dunker, Index Moll. Mar. Japon., p. 62.

September 9, 1874. Off Albany Island, Cape York, Torres Straits. 3 to 12 fathoms.

Habitat.—The whole Indian Ocean from the African Coast and Red Sea to Ceylon, the Nicobars, and the Malay Archipelago (v. Martens).

Fossil.—On shores of Red Sea (Issel).

As this species has often been confounded with others, it may be useful to say that (apart from other obvious differences), it is distinguished from *Natica aurantia*, Lam., by its minute, delicate, depressed, and black apex, and from *Natica porcellana*, d'Orb., to which, in these respects, it lies much nearer, by the apex being still smaller, by the much slower increase of the whorls, and by its entirely closed umbilicus, which in that species is always half open. On careful examination of Recluz's type of *Natica pyriformis* in the British Museum, I satisfied myself that, as Philippi suspected, this was only a young form of *Natica mamilla*. The "parallele Furche" "am Rande der Spindel," which made Philippi hesitate, is a mere feature of immaturity filled up in the older shell. Mr E. A. Smith fully shared my opinion of this species.

27. *Natica* (*Mamma*) *porcellana*, d'Orbigny.

Natica porcellana, d'Orbigny, Moll. Canaries, Webb and Berthelot, p. 84, pl. vi. figs. 27, 28.
„ „ Philippi, Conch. Cab. (ed. Küster), p. 62, sp. 68, pl. x. fig. 4.
„ „ Reeve, Conch. Icon., vol. ix. pl. xxiii. fig. 102.
„ „ Seguenza, Formaz. Terz. Calabria, p. 354.
„ „ Sowerby, Thes. Conch., pts. 39, 40, p. 89, sp. 82, pl. ccccclxi. (viii. *Gen.*), fig. 126 (*pessime*).

February 10, 1873. Tenerife, Canaries. 70 fathoms.
July 28–31, 1873. St Vincent, Cape de Verdes. 7 to 25 fathoms.

Habitat.—Bahia (Reeve); Madeira (Watson); and Canaries (d'Orbigny).

Fossil.—Post-pliocene of Calabria (Seguenza).

Under *Natica mamilla*, Linne, I have referred to some of the features which markedly distinguish this species from that of Linne. I regret that I am not able to compare the opercula of the two

species. Gray in Beechey's Voyage, Zool., p. 136, says that the operculum of *Natica mamilla*, Linne, is horny. D'Orbigny says nothing whatever of the operculum of his species, and among the very large number of specimens which I got in Madeira not one retained its operculum, nor in dredging did I ever meet with it, which probably indicates its membranaceous character.

28. *Natica* (*Amauropsis*) *perscalpta*, v. Martens (Pl. XXVIII. fig. 4).

Natica (*Amauropsis*) *perscalpta*, v. Martens, Sitzungsb. Gesellsch. Naturf. Fr. Berlin, February 19, 1878, p. 25.

Station 149. January 9, 1874. Lat. 49° 8′ S., long. 70° 12′ E. Kerguelen. 20 fathoms. Volcanic mud.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Habitat.—Kerguelen (v. Martens).

Professor v. Martens confirmed my identification of this species. He (*loc. cit.*) observes that in sculpture it recalls *Naticina* and *Sigaretus*. He puts it in the *Amauropsis* group, and but for its shallow suture finds it like *Natica islandica*, Gm., which it had not suggested to my mind. In the third line of Professor v. Martens' diagnosis, the word *ultimo*—"*lineis . . . circa* 20 *in anfr. ultimo*" should read—*penultimo*.

29. *Natica* (*Amauropsis*) *apora*,[1] Watson (Pl. XXVII. fig. 11).

Natica apora, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 265.

Station 191. September 23, 1874. Lat. 5° 41′ S., long. 134° 4′ 30″ E. Off the Arrou Islands. 800 fathoms. Green mud. Bottom temperature 39°·5.

Shell.—Conically globose, pointed on the base, with a pointed apex and a very slightly impressed suture; smooth but not glossy, buff-coloured, with white pillar-lip; umbilicus quite closed. *Sculpture:* Longitudinals—close-set, regular, hair-like lines of growth, which above near the suture are gathered into radiating puckers; these are strongest on the upper whorls. Spirals—there are traces of very slight furrows and obsolete lines, which are somewhat stronger and more regular on the base. *Colour:* below the ruddyish-yellow epidermis the shell is porcellanous white. *Epidermis* thin, finely fibrous, persistent. *Spire* rather high and conical, its outline being hardly broken by the rounding of the whorls and the sinking in of the sutural lines. *Apex* large, but being eroded, the extreme tip is much effaced. *Whorls* 5, very little rounded, and, though flattened, not at all constricted below the suture. *Suture* oblique, scarcely at all impressed, but very slightly channelled. *Mouth* very oblique from the front backwards, but in its own direction very straight in the line of the shell's axis; oval, pointed above, and there slightly narrowed, fully rounded below; a considerable pad fills its upper corner; it is nearly four-fifths of the

[1] ἄπορος, impervious.

whole height of the shell. It is slightly contracted above, and is not very open below; and is altogether rather small for the shell. *Outer lip* is a little flattened above; but from this forms a full round sweep. *Inner lip* slightly concave; the moderate pad which fills the upper corner of the mouth is divided from the edge of the outer lip by an angular furrow, below which a small tubercular swelling runs out with a slight downward direction; the pad spreads widely and thinly across the body, and covers the umbilicus so as to leave of it only a mere chink; below this it narrows, but without any sudden contraction, to the somewhat thickened pillar, where there is a bevelling off to a narrow reverted edge, which is continued round on the base to meet the outer lip. H. 0·57. B. 0·45. Penultimate whorl, height 0·15. Mouth, height 0·41, breadth 0·3.

This species belongs to the *Amauropsis* group; but I know none with which to compare it. It is much higher and narrower than *Natica impervia*, Phil., from Magellan Straits. There is a species of *Natica* from Station 169, north-east from New Zealand, 700 fathoms, which may perhaps be this species; but it is in too bad condition for identification.

30. *Natica* (*Amauropsis*) *suturalis*, Watson (Pl. XXVII. fig. 4).

Natica suturalis, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 257.

Station 149c. January 19, 1874. Lat. 49° 32′ S., long. 70° 0′ E. Balfour Bay, Royal Sound, Kerguelen's Land. 60 fathoms. Volcanic mud.

Shell.—Conic-oval, thin, umbilicated, with a coarse brown epidermis, and a channelled suture. *Sculpture:* Longitudinals—the surface is covered with fine close-set hair-like striæ, indicating lines of growth. Spirals—there are a good many faint flexuous lines, and very obsolete but broader furrows. *Colour* apparently yellowish white, but there is a very persistent, dull ruddyish-brown epidermis, in which there are narrow longitudinal lines of lighter and darker shade. *Spire* high and scalar, each whorl rising high out of the one below. *Apex* quite worn away in both specimens. *Whorls* 4½, tumid, large from the beginning and of slow increase. *Suture* not very oblique, channelled. *Mouth* very slightly oblique to the axis, semicircular, but a little slewed, so as to be very slightly pointed above, and unduly bulging below beyond the point of the pillar; it is two-thirds of the total height of the shell. *Outer lip* retreats somewhat on leaving the body-whorl, and at this part is slightly contracted, but below this it is open and its curve is very regular; there is a very faint tendency to angulation on the base; its edge is narrow and sharp. *Inner lip* straight till it strikes the base of the shell, where it curves with a full rounded sweep to the right; it is carried across the body on a thickish, prominent, reverted layer, crosses the umbilicus with a thin reverted edge, which half covers the opening, and is thickened and rounded, with a narrowed edge at the point of the pillar. *Umbilicus* is a funnel-shaped opening, very much contracted and concealed by the reverted pillar-lip. H. 0·7. B. 0·63. Penultimate whorl, height 0·22. Mouth, height 0·47, breadth 0·38.

This species has so strongly the aspect of *Natica islandica*, Gm. (= *helicoides*, Johnston = *canaliculata*, Gd. = *cornea*, Möller, out of which and the two latter synonyms Messrs Adams form their genus, which is Mörch's subgenus *Amauropsis*, characterising it by a feature which the species has not, viz., the absence of an umbilicus), that I can easily believe connecting links will yet establish their identity. The age of *Natica islandica* and its distribution, as well as its present habitat in Subarctic and Arctic seas, make its presence in Antarctic regions more probable. But for the present it is impossible to unite them. *Natica suturalis* has an epidermis which, though minutely marked very much like that of *Natica islandica*, is coarser, darker-coloured, and more fibrous; the form of the shell is broader; the spire is lower, less scalar, with a less deeply channelled suture; the mouth is much rounder and is less pointed below. Dr Gwyn Jeffreys considers this species to be *Natica grœnlandica*, Beck, var. *pallida*, Brod. and Sow. There are specimens of that species which present much the same epidermis and some which have an unusually high spire, but I have seen none approaching this species in the excess it presents in the latter feature, nor is the suture ever so channelled; in *Natica pallida*, too, there is always a contraction of the outline below the suture, which is quite absent here; and in that species the inner lip is very much thicker.

Family Capuloïdea, Cuvier, 1830.

Genera. 1. *Capulus*, Montf. 2. *Amalthea*, Schum. 3. *Crepidula*, Lam. 4. *Calyptræa*, Lam. 5. *Mitrularia*, Schum.

1. *Capulus*, Montfort, 1810.

Species.

1. *Capulus japonicus*, A. Ad. 2. *Capulus* (*Amathina*) *tricarinatus* (Linne).

1. *Capulus japonicus*, A. Adams.

Capulus japonicus, A. Adams, Ann. and Mag., 1861, ser. 3, vol. viii. p. 138, sp. 1.
„ „ Dunker, Index Moll. Mar. Japon., p. 124.

March 7, 1875. Admiralty Islands, north-east of Papua. 16 to 25 fathoms.

Habitat.—Mino Sima, Japan (Adams).

2. *Capulus* (*Amathina*) *tricarinatus* (Linne).

Patella tricarinata, Linne, Syst. Nat. (ed. 12), p. 1259, No. 764.
„ *tricostata*, Gmelin, Syst. Nat., p. 3698, No. 27, and (as *Patella tricarinata*) p. 3710, No. 92.
„ „ Chemnitz, Conch. Cab., vol. x. p. 333, pl. clxviii. figs. 1622, 1623.
„ *tricarinata*, Dillwyn, Cat., vol. ii. p. 1039, sp. 52.
„ „ Wood, Ind. Test., p. 187, pl. xxxvii. fig. 51.
„ *tricostata*, Lamarck, Anim. s. vert., vol. vi. (1) p. 335, and (ed. Desh.) vol. vii. p. 540, sp. 43 (in note *Pileopsis tricarinata*).

Patella tricostata, Deshayes, Encycl. méthod., vers, vol. ii. (2) p. 152, sp. 3.
„ *tricarinata*, Hanley, Ipsa Linn. Conch., pp. 423, 546.
Amathina tricarinata, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1878, vol. ii. p. 5, No. 25.
„ *tricostata*, Dunker, Index Moll. Mar. Japon., p. 125.

Station 233. May 17, 1875. Lat. 34° 39′ N., long. 135° 14′ E. Kobi, Japan. 8 fathoms. Mud.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York, North-east Australia. 8 fathoms. Coral mud.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Near Cape York, North-east Australia. 6 fathoms. Coral mud.

Habitat.—Philippines (Hanley); Japan (Dunker).

2. *Amalthea*, Schumacher, 1817.

Schumacher's genus was published in 1817; Defrance published the name *Hipponyx* in 1819; the latter genus being distinguished by the presence of a hoof-shaped shelly plate deposited on the object supplying a home, and to which plate the animal is attached. But it seems unquestionable that this is a feature dependent partly on the object of attachment and partly on the age of the animal (see Fischer, Journ. de conch., 1862, vol. x. p. 7).

Species.

1. *Amalthea acuta* (Quoy and Gaimard). 2. *Amalthea australis* (Lam.)

1. *Amalthea acuta* (Quoy and Gaimard).

Hipponyx acuta, Quoy and Gaimard, "Astrolabe," Zool., vol. iii. p. 437, pl. lxxii. figs. 35–38.
Hipponix acuta, Lamarck (ed. Desh.), vol. vii. p. 615, sp. 3.
Hipponyx acutus, Crosse, Journ. de conch., 1862, vol. x. p. 22, sp. 7.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—New Ireland (Quoy and Gaimard), Pacific Islands (British Museum), "trouvé sur *Cerithium læve*, Australie" (Geneva Museum, Collection Delessert, but unnamed).

2. *Amalthea australis*, Lamarck.

Patella australis, Lamarck, Anim. s. vert., vol. vi. (1) p. 335, sp. 44, and (ed. Desh.) vol. vii. p. 541, sp. 44.
Hipponix australis, Deshayes, Encycl. méthod., vers, vol. ii. p. 274, sp. 1.
„ „ Quoy and Gaimard, "Astrolabe," vol. iii. p. 434, pl. lxxii. figs. 25–34.
Patella australis, Delessert, Recueil, pl. xxiii. fig. 11.
Amalthea australis, Adams, Genera, vol. i. p. 374, pl. xli. fig. 4.
Hipponyx australis, Crosse, Journ. de conch., 1862, vol. x. p. 21, sp. 6.

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ W. Off Nukalofa, Tongatabu. 18 fathoms. Coral mud.

Habitat.—"Nouvelle Holland" (Lamarck); Australia and the Philippines (British Museum).

Capulus danieli, Crosse, approaches this species very closely, but in it the apex turns to the left, while in the present shell the apex turns to the right.

3. *Crepidula*, Lamarck, 1797.

Species.

1. *Crepidula aculeata* (Gm.)
2. *Crepidula dilatata*, Lam.
3. *Crepidula fornicata* (Linne).
4. *Crepidula immersa* (Angas).
5. *Crepidula onyx*, Sow.

1. *Crepidula aculeata* (Gmelin).

Patella aculeata, Gmelin, Syst. Nat., p. 3693, No. 6.
" " Chemnitz, Conch. Cab., vol. x. p. 334, pl. clxviii. figs. 1624, 1625.
" " Dillwyn, Cat., vol. ii. p. 1020, sp. 11.
" " Wood, Ind. Test., p. 184, pl. xxxvii. fig. 11.
Crepidula aculeata, Lamarck, Anim. s. vert., vol. vi. (2) p. 25, and (ed. Desh.) vol. vii. p. 642, sp. 3.
" " Sowerby, Genera, vol. i. pl. clii. fig. 4.
" " Deshayes, Encycl. méthod., vers, vol. ii. (2) p. 27, sp. 11.
" " d'Orbigny, Amérique méridionale, Moll., vol. v. p. 464, No. 415, pl. lviii. figs. 4, 5.
" " Krauss, Südafrik. Moll., p. 69, sp. 4.
" " Reeve, Conch. Icon., vol. xi. pl. iv. fig. 22, pl. v. fig. 27.
" " d'Orbigny, Moll. de Cuba, vol. ii. p. 191, No. 395.
" " Dunker, Moll. Guinea, p. 35, No. 94.
" " Carpenter, Moll. N.W. America, Brit. Assoc. Report, 1856, p. 323, and (1863) p. 622, No. 200.
" " Carpenter, Mazatlan Moll., p. 268, No. 334.
Crypta aculeata, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 211, No. 156.
" " Gray, Calyptræidæ, Proc. Zool. Soc. Lond., 1867, p. 737, sp. 1.
Crepidula aculeata, Lischke, Jap. Meer. Conch., vol. ii. p. 76.
" " v. Martens, Moll. Mauritius, &c., p. 287.
" " Sowerby, Thes. Conch., pts. 39, 40, p. 67, sp. 9, pl. ccccliii. (*Fam.* viii.) figs. 124, 125.
Calyptræa aculeata, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1878, vol. ii. p. 4, No. 21.
Crepidula aculeata, Dunker, Ind. Moll. Mar. Japon., p. 124.

April 17, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
May 1874. Port Jackson, Sydney. 6 to 7 fathoms.
Station 233 and 233A. May 17–19, 1875. Kobi, Japan. 8 to 50 fathoms.

Habitat.—The Western Pacific from Japan to New Zealand and Australia, India and the Indian Ocean, Africa from the Cape to Guinea, America from the West Indies to Patagonia and to California, the Sandwich Islands (Lischke). Torres Strait, 11 fathoms; New Guinea, 8 fathoms (Brazier).

For the synonymy and extraordinary distribution of this species nothing can be fuller and better than the disquisition by Lischke (*loc. cit. supra*). No less interesting is that of Carpenter, Mazatlan Moll. (*loc. cit. supra*).

2. *Crepidula dilatata*, Lamarck.

Crepidula dilatata, Lamarck, Anim. s. vert., vol. vi. (2) p. 25, and (ed. Desh.) vol. vii. p. 644, sp. 5.
" " Delessert, Recueil, pl. xxv. fig. 4.
" " Sowerby, Genera, vol. i. pl. clii. fig. 5.
Calyptræa dilatata, Broderip, Proc. Zool. Soc. Lond., 1834, p. 38.
Crepidula dilatata, Reeve, Conch. Icon., vol. xi. pl. i. fig. 3.
" " d'Orbigny, Amér. Mérid., vol. v. p. 465, pl. lviii. fig. 6.
" " Carpenter, Mazatlan Moll., p. 272, No. 335.
Crepipatella dilatata, Gray, Proc. Zool. Soc. Lond., 1867, p. 736.
Crepidula dilatata, Sowerby, Thes. Conch., pts. 39, 40, p. 65, sp. 1, pl. ccccli. (*Fam.* vii.) figs. 100–102.

Station 315. January 26–28, 1876. Port Stanley and Port William, Falkland Islands. 5 to 12 fathoms. Sand and gravel.

Habitat.—South America (d'Orbigny); Falkland Islands and Strait of Magellan (Reeve).

Carpenter's remarks (*loc. cit. supra*) on the synonymy and distribution of this species are, as usual, of great value. It is to be regretted that so much useful information is buried in a work outwardly so unattractive, and in which the absence of an index makes study a toil.

3. *Crepidula fornicata* (Linne).

Le Sulin, Adanson, Sénégal, p. 38, pl. ii. fig. 8.
Patella fornicata, Linne, Syst. Nat. (ed. 12), p. 1257, No. 751.
Martini, Conch. Cab., vol. i. p. 159, pl. xiii. figs. 129, 130.
" " Dillwyn, Cat., vol. ii. p. 1019, sp. 10.
" " Wood, Ind. Test., p. 184, pl. xxxvii. fig. 10.
Crepidula fornicata, Lamarck, Anim. s. vert., vol. vi. (2) p. 24, and (ed. Desh.) vol. vii. p. 641, sp. 1.
" " Deshayes, Encycl. méthod., vers, vol. ii. (2) p. 25, sp. 1.
" " Dunker, Moll. Guinea, p. 34, No. 91.
Patella fornicata, Hanley, Ipsa Linn. Conch., pp. 416, 545.
Crepidula fornicata, Chenu, Manuel, vol. i. p. 327, fig. 2354.
" " Gould, Inverteb. Mass. (ed. Gould), p. 271, fig. 532.
" " Sowerby, Thes. Conch., pts. 39, 40, p. 66, sp. 5, pl. cccclii. (*Fam.* viii.) figs. 118, 123.

July 28–31, 1873. St Vincent, Cape Verdes. 7 to 25 fathoms.

Habitat.—North America, West Indies, West Africa.

4. *Crepidula immersa* (Angas).

Crypta immersa, Angas, New Australian Shells, Proc. Zool. Soc. Lond., 1865, p. 57, pl. ii. fig. 12.
Crypta (Ianaclus) immersa, Angas, South Australian Moll., Proc. Zool. Soc. Lond., 1865, p. 174, No. 118.
Crepidula porcellana, var., Sowerby, Thes. Conch., pts. 39, 40, p. 66, sp. 7, pl. cccclii. (*Fam.* viii.) fig. 122.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

Habitat.—Port Lincoln, St Vincent's and Spencer Gulfs, South Australia (Angas).

Two specimens of this species were got attached to the inside of the outer lip of a dead *Voluta undulata*, Lam., inhabited by a *Pagurus strigimanus*.

5. *Crepidula onyx*, Sowerby.

Crepidula onyx, Sowerby, Genera, vol. i. pl. clii. fig. 2.
„ „ Reeve, Conch. Icon., vol. xi. pl. ii. fig. 9.
„ „ Carpenter, Moll. N.W. America, Brit. Assoc. Report, 1856, p. 323, and (1863) p. 622, No. 203.
„ „ Carpenter, Mazatlan Moll., p. 278, No. 340.
Crypta porcellana, var., Gray, Proc. Zool. Soc. Lond., 1867, p. 738.
Crepidula onyx, Sowerby, Thes. Conch., pts. 39, 40, p. 66, sp. 4, pl. cccclii. ccccliii. (*Fam.* viii., ix.) fig. 112.

October 15, 1873. Tristan da Cunha. Shore.

Habitat.—Panama and Mazatlan (Carpenter).

The solitary specimen of this species obtained by the Challenger is in the very worst possible condition, and the identification is therefore somewhat doubtful. Carpenter (Mazatlan Mollusca, *loc. cit. supra*) considers this species as probably the same as *Crepidula hepatica*, Krauss (Südafrik. Moll., p. 69, sp. 3, pl. iv. fig. 12), from the Cape, and (*teste* Dunker, Moll. Guinea, p. 34, No. 92, pl. v. figs. 4, 5) from the coast of Guinea, an extension of the habitat, which tends to confirm my identification above.

4. *Calyptræa*, Lamarck, 1799.

Species.

1. *Calyptræa calyptræformis* (Lam.)
2. *Calyptræa pileus* (Lam.)

1. *Calyptræa calyptræformis* (Lamarck).

Trochus calyptræformis, Lamarck, Anim. s. vert., vol. vii. p. 12, and (ed. Desh.) vol. ix. p. 125, sp. 7, p. 162, sp. 9.
Calyptræa Lamarckii, Deshayes, Encycl. méthod., vers, vol. ii. p. 170, sp. 2.
Crepidula tomentosa, Quoy and Gaimard, "Astrolabe," Zool., vol. iii. p. 419, pl. lxxii. figs. 1–5.
Calyptræa Lamarckii, Lamarck, Anim. s. vert. (ed. Desh.) vol. vii. p. 627, sp. 9.

Trochus calyptræformis, Delessert, Recueil, pl. xxxiv. fig. 7.
Trochita calyptræformis, Reeve, Conch. Icon., vol. xi. pl. iii. fig. 1.
„ (*Haliotidea*) *calyptræformis*, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 211, No. 154.
Trochella calyptræformis, Gray, Calyptræidæ, Proc. Zool. Soc. Lond., 1867, p. 736, sp. 2.
Trochita calyptræformis, Sowerby, Thes. Conch., pts. 39, 40, p. 63, sp. 10, pl. ccccl. (*Fam.* vi.) figs. 85, 86.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

April 23, 1874. Port Jackson, Sydney. 6 to 15 fathoms.

Habitat.—Brune Island, Van Diemen's Land (British Museum); Port Jackson (Angas).

2. *Calyptræa pileus* (Lamarck).

Trochus pileus, Lamarck, Anim. s. vert., vol. vii. p. 11, and (ed. Desh.) vol. ix. p. 124, sp. 6.
„ „ Delessert, Recueil, pl. xxxiv. fig. 5.
Trochita corrugata, Reeve, Conch. Icon., vol. xi. pl. ii. fig. 9.
Clypeola corrugata, Gray, Calyptræidæ, Proc. Zool. Soc. Lond., 1867, p. 735.

Station 315. January 26–28, 1876. Lat. 51° 40′ S., long. 57° 50′ W. Port Stanley and Port William, Falkland Islands. 5 to 12 fathoms. Sand and gravel.

Habitat.—Falkland Islands (Gray); Peru (Reeve).

I have not quoted Sowerby (Thes. Conch., pts. 39, 40, p. 64, sp. 15, pl. ccccli. figs. 97, 98, *Trochita spirata*, Forb., *Trochita pileus*, Lam., var.) for this species, my acquaintance with the form Forbes has described as distinct (Proc. Zool. Soc. Lond., 1850, p. 271, pl. xi. fig. 1) not being sufficient to make my opinion regarding it of any value, and Sowerby gives no other representation of Lamarck's species. Between the two it is Lamarck's, not Forbes' form, which the Challenger shell resembles.

5. *Mitrularia*, Schumacher, 1817.

Mitrularia uncinata (Reeve).

Calyptræa uncinata, Reeve, Conch. Icon., vol. xi. pl. v. fig. 17, a and b.
Calyptra tectum-sinense, Gray, Calyptræidæ, Proc. Zool. Soc. Lond., 1867, p. 747.
Calyptra uncinata, Sowerby, Thes. Conch., pts. 39, 40, p. 56, sp. 5, pl. ccccxxvi. (*Fam.* ii.) fig. 28.

May and April, 1873. North Atlantic. Deep water.

(?) Station 113A. September 2, 1873. Lat. 3° 47′ S., long. 32° 24′ 20″ W. Anchorage, Fernando-Noronha. 7 to 25 fathoms. Volcanic sand and gravel.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Habitat.—St Thomas, West Indies (Reeve); the Philippine Islands (Gray).

The nomenclature in this and some of the closely connected genera is very confused. Reeve says this species is slightly wrinkled—the Challenger specimens are more so than is usual, and very much resemble *Mitrularia tortilis*, Reeve, but that species has not the fine, twisted, and persistent apex which is present here—the longitudinal striæ in it are coarse, and the locality forbids the union of the Challenger specimens with it, for it is a native of the Galapagos. I have with much hesitation united to this species the specimens from Station 113A; in them the embryonic apex is more appressed than it is in those from the other two stations, but the general texture and sculpture are very much alike. As usual in the case of all critical species, whether his own or of other people, Reeve gives no help, and Gray (*loc. cit.*) seems to have made his *Calyptra tectum-sinense* a sort of refuge for destitute species from every quarter. Eighteen species are sheltered under it—one of these, *Calyptra depressa*, Adams and Reeve, having been already classed as a synonym of *Calyptra adamsii*, Reeve. After this Dr Gray adds, "I am by no means certain that the six species here distinguished" (constituting the whole list of admitted species) "are distinct," and he concludes, "They all seem to live together at the Philippine Islands," which they certainly do not. Obviously, therefore, the whole group requires careful examination and criticism. In the meantime, guess-work alone being possible, I content myself with putting the specimens I have to deal with in the group nearest in form and in dwelling-place. I ought perhaps to add that somewhat similarly, as regards the name of the genus, I have been glad to accept, not what is or might be best, but what seemed least open to objection.

Family PHORIDÆ, Gray, 1840.

Genus *Xenophora*, Fischer von Waldheim, 1807.

Onustus was a mere museum name of Humphreys. *Phorus* of Montfort dates from 1810.

Species.

1. *Xenophora caribæa*, Petit.
2. *Xenophora corrugata* (Reeve).
3. *Xenophora helvacea*, Philippi.
4. *Xenophora pallidula* (Reeve).
5. *Xenophora solarioides* (Reeve).

1. *Xenophora caribæa*, Petit.

Xenophora caribæa, Petit de la Saussaye, Journ. de conch., 1857, vol. v. p. 248, pl. x. figs. 1, 2.
" " Fischer, Cat. coq. de Guadaloupe, Revue coloniale, p. 12 (separate impression).
" " Fischer, Kiener's Iconog. (*Trochus*), p. 429, sp. 2, pl. lxv. fig. 1.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Habitat.—West Indies.

Fischer, in his Guadaloupe Catalogue (*loc. cit. supra*) remarks of this species that it "provient de la côte de Marie-Galante quartier du vieux fort Saint Louis. M. de Villepin en a trouvé 11 exemplaires sur des nasses de pêcheurs, mouillées à de grandes profondeurs." In general aspect, though much

higher in form, and in texture finer, it much resembles *Xenophora exuta* (Reeve), of which species it has the umbilicus, though not so large and open, and the circum-umbilical gemmate carina is wanting. In *Xenophora exuta* the agglutinated foreign bodies when present are only found round the top of the spire, while the peripheral lamella has an undulating or triangularly toothed edge. In *Xenophora caribœa*, on the contrary, foreign bodies are plentifully attached to the peripheral lamella, but are entirely absent from the spire; the base is flat to convex, not at all concave, and the lines of growth are not regular. M. Petit (*loc. cit.*) says that in *Xenophora caribœa* the base is "blanche, brilliante;" in all the four Challenger specimens the under surface of the flange is brilliant, though more or less smoky, but the base of the shell is like the upper surface, only paler and more finely ornamented. The "cordon concentrique" at the "contact du limbe," which Dr Fischer says is "bien prononcé," is in one of the Challenger specimens very doubtfully present.

2. *Xenophora corrugata* (Reeve).

Phorus corrugatus, Reeve, Proc. Zool. Soc. Lond., 1842, p. 163.
" " Reeve, Conch. Syst., vol. ii. p. 159, pl. ccxiv. fig. 5.
" " Reeve, Conch. Icon., vol. i. pl. ii. fig. 6.
Xenophora corrugata, Philippi, Conch. Cab. (ed. Küster, *Trochus*), p. 346, sp. 7, pl. xlviii. fig. 1.
" " Fischer, Kiener's Iconog. (*Trochus*), p. 441, sp. 11, pl. viii.

Station 113A. September 2, 1873. Lat. 3° 47′ S., long. 32° 24′ 30″ W. Anchorage off Fernando-Noronha. 7 to 25 fathoms. Volcanic sand and gravel.

Habitat.—Indian Ocean, Zanzibar, Ceylon, Persian Gulf, Japan, China Seas (Fischer).

Dr Fischer considers the locality Japan as doubtful, though backed partially by Reeve's quotation of the species from China. Dunker, however, does not acknowledge it in his Japanese Index.

3. *Xenophora helvacea*, Philippi.

Xenophora helvacea, Philippi, Conch. Cab. (ed. Küster, *Trochus*), p. 343, sp. 3, pl. xlvii. fig. 1.
Xenophorus helvaceus, Philippi, Zeitschr. f. Malak., 1851, p. 44, No. 41.
Xenophora helvacea, Petit de la Saussaye, Journ. de conch., 1857, vol. v. p. 250.
" " Fischer, Kiener's Iconog. (*Trochus*), p. 432, sp. 4, pl. liii.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York. Off south-west point of Papua. 28 fathoms. Green mud.

Habitat.—Madagascar (Petit de la Saussaye).

Both in illustrated works and in museums there has been, as Philippi (*loc. cit.*) remarks, a good deal of confusion between this species and *Xenophora indica*, Gm. Philippi, as usual, both in his description and in his figures, admirably indicates the distinctions; this is even better done by Fischer in his beautiful monograph in Kiener.

4. *Xenophora pallidula* (Reeve), (Pl. XXVIII. fig. 6).

Phorus pallidulus, Reeve, Proc. Zool. Soc. Lond., 1842, p. 162.
" " Reeve, Conch. Syst., vol. ii. pl. ccxiv. fig. 4.
" " Reeve, Conch. Icon., vol. i. pl. i. fig. 4.
Xenophora pallidula, Philippi, Conch. Cab. (ed. Küster, *Trochus*), p. 347, sp. 8, pl. xlviii. fig. 2.
" " Lischke, Japan. Meer. Conch., vol. ii. p. 169, vol. iii. p. 56, pl. iii. figs. 1–3.
" " Fischer, Kiener's Iconog. (*Trochus*), p. 444, sp. 13, pl. liv.
" " Dunker, Ind. Moll. Mar. Japon., p. 123.

Station 204 A and B. November 2, 1874. Lat. 12° 43′ S., long. 122° 9′ E. Philippines. 100 to 115 fathoms. Green mud.

Habitat.—Japan (Lischke).

This species beyond all others buries itself in the mass of materials which it piles on its shell; the Challenger specimen (see figure) surpasses anything I have seen, not so much in the mere mass as in the selection and arrangement of its foreign burden of shells. These, besides some small Ledas and *Limopsides* with fragments of *Turbo* (*Calcar*), &c., on the spire, are chiefly long Mitras and Pleurotomas (*Pleurotoma speciosa*, Reeve, *Pleurotoma deshaysii*, Doumets, *Pleurotoma climacota*, Wats., *Pleurotoma*, sp.), a *Cerithium*, and Terebras (*Terebra*, sp., and *Terebra mamillata*, Wats.), which project from the periphery like the spokes of a wheel. Messrs H. and A. Adams (Genera, vol. i. p. 363) remark that "the adventitious pieces of shell are so disposed as not to curve downwards beyond the edge of the shell so as to impede the progress of the animal, but are usually placed with their concave sides uppermost." The fact that these "adventitious" burdens are soldered into the shell by the inhabitant itself will account for their not being stumbling-blocks, but in this specimen they certainly project much below the plane of the base.

The embryonic apex of this species is white, with brown epidermis, small, rounded, and formed of four whorls.

5. *Xenophora solarioïdes* (Reeve).

Phorus solarioïdes, Reeve, Conch. Icon., vol. i. pl. iii. fig. 8.
" " Adams and Reeve, "Samarang" Moll., p. 50, sp. 1, pl. xvii. fig. 6.
Xenophora solarioïdes, Philippi, Conch. Cab. (ed. Küster, *Trochus*), p. 346, sp. 6, pl. xlvii. fig. 6.
" " Fischer in Kiener's Iconog. (*Trochus*), p. 447, sp. 15, pl. xliv. fig. 3.
" " Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1878, vol. ii. p. 3, No. 19.

September 8, 1874. Torres Strait. Off Albany Island, Cape York. 3 to 12 fathoms.

Station 208. January 17, 1875. Lat. 11° 37′ N., long. 123° 31′ E. Philippines. 18 fathoms. Blue mud.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Off Malanipa, Basilan Strait, Philippines. 10 to 20 fathoms. Sand.

Habitat.—Philippines and Andamans (British Museum).

In this species the embryonic apex is small and prominent, composed of nearly three smallish, transparent white whorls. The specimen from Station 212 is beset with *Venus marica*, Linne, some *Ostreas*, a *Trochus*, and a species of *Terebra*, which I believe to be new.

Family TUBULIBRANCHIA, Cuvier, 1830.

Genera. 1. *Cæcum*, Fleming. 2. *Vermetus*, Adanson. 3. *Siliquaria*, Bruguière.

1. *Cæcum*, Fleming, 1824. (See Appendix No. 6.)

2. *Vermetus*, Adanson, 1757.

Vermetus (?) *cyclicus*,[1] n. sp. (Pl. XXXI. fig. 1).

September 8, 1874. Flinders Passage, Cape York, North-east Australia. 7 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York, North-east Australia. 8 fathoms. Coral mud.

Shell.—Small, thin, white, discoidal, of slow and regular increase, with the coiled-up embryonic tip of a *Cæcum:* below this the early part of the shell is straight and polished, with only very feeble microscopic annular lines, and rises out of the plane of the disc, but is attached to the succeeding whorl across which it lies; all the latter part of the shell is sparsely and circularly ribbed as in *Scalaria;* the whole surface, including both the ribs and the much wider interstices, is fretted with exquisitely delicate, sharp, and regular longitudinal scratches, of which about five go to the thousandth of an inch; there are also between the ribs very feeble, narrow, and sparse circular threadlets, which only appear as being faintly translucent on the dead frosted surface; there is about one of these to each thousandth of an inch; exclusive of the embryonic apex of $1\frac{1}{2}$ whorls, and exclusive also of the little straight part which follows, the shell presents about $1\frac{1}{2}$ whorls, which are discoidally coiled, adjacent, and adherent to one another; the mouth is circular.

Height (exclusive of projection of embryonic shell), 0·019 in., height (including this projection), 0·027. Breadth, 0·035; breadth of last whorl at mouth, 0·017; breadth of embryonic tip, 0·0044. Length of tip and smooth part, 0·019.

This is a very curious and beautiful little shell, whose generic place is very doubtful. *Ctiloceras* or Ramshorn suggested itself as a suitable name for a new genus near *Cæcum*, but the creation of a new genus could really not be justified for a shell about which so little is known.

[1] κυκλικός, circular.

3. *Siliquaria*, Bruguière, 1792.

Siliquaria (*Tenagodus*) *bernardii*, Mörch.

Tenagodus bernardii, Mörch, Journ. de conch., 1860, vol. viii. p. 368, and 1865, vol. xiii. p. 23, pl. iv. fig. 3.

Siliquaria bernardii, Reeve, Conch. Icon., vol. xx. pl. iv. fig. 9.

May or April 1873. North Atlantic. Deep water.

Habitat.—Senegal (Reeve).

Family TURRITELLIDÆ, Gray, 1857.

Genus *Turritella*, Lam., 1799.

The genus *Turritella* is a group well defined, as regards the shell, the animal, and the operculum; nor is it unmanageably large. There is therefore no *primâ facie* reason for breaking it up as Gray has done; and his destructive process has not justified itself in the characters of the genera he proposed, which are neither strongly marked nor constant. The consequence is that the lists of species arranged under *Turritella* (with subgen. *Haustator*), *Torcula*, and *Zaria* are arbitrary in the extreme; and these divisions only cause confusion.

There are two remarkable features of *Turritella* which do not seem to have been noticed. The first is the system of microscopic spirals which covers the entire shell, and which I have found on every even fairly preserved specimen which I have examined. The second is the presence of an epidermis. This is very distinctly recognisable in *Turritella carlottæ* and in *Turritella austrina*, and somewhat doubtfully in *Turritella admirabilis*. It is filmy, calcareous, and in drying seems to contract, so as to rise off the surface of the shell in the furrows, remaining attached only to the tops of the spirals and in the suture. It also splits in the lines of growth. All this renders it of course very caducous; and, as Mr E. A. Smith remarks, "the fact of all Turritellas appearing to be devoid of an epidermis is quite comprehensible, seeing how excessively thin it is in this instance" (*i.e.*, of *Turritella carlottæ*, which I had sent to him for examination). Hardly sufficient importance seems generally given to the sinuation of the outer lip, which is a feature quite as distinctly marked as in *Pleurotoma*.

Species.

1. *Turritella bicingulata*, Lam.
2. *Turritella cingulifera*, Sow.
3. *Turritella exoleta* (Linne).
4. *Turritella fascialis*, Menke.
5. *Turritella fastigiata*, Adams and Reeve.
6. *Turritella knysnäensis*, Krauss.
7. *Turritella rosea*, Quoy and Gaimard.
8. *Turritella sinuata*, Reeve.
9. *Turritella cordismei*, Wats.
10. *Turritella austrina*, Wats.
11. *Turritella deliciosa*, Wats.
12. *Turritella admirabilis*, Wats.
13. *Turritella lamellosa*, Wats.
14. *Turritella runcinata*, Wats.
15. *Turritella accisa*, Wats.
16. *Turritella carlottæ*, Wats.
17. *Turritella philippensis*, Wats.
18. *Turritella* (*Eglisia*) *tricarinata*, Adams and Reeve.

1. *Turritella bicingulata*, Lamarck.

Turbo xylohelix, Chemnitz, Conch. Cab., vol. iv. p. 260, pl. clii. fig. 1423.
Turritella bicingulata, Lamarck, Anim. s. vert., vol. vii. p. 58, and (ed. Desh.) vol. ix. p. 256, sp. 8.
„ „ Deshayes, Encycl. méthod., vers, vol. iii. p. 1102, sp. 4.
„ „ Kiener, Iconog., p. 14, sp. 10, pl. viii. fig. 2.
„ „ Reeve, Conch. Icon., vol. v. pl. v. fig. 20.
„ *triplicata*, M'Andrew, North Atlantic Dredgings, Canaries, p. 31.
„ *bicingulata*, Dunker, Index Moll. Guinea, 1853, p. 13, No. 33.

Station VIIp. February 10, 1873. Lat. 28° 35′ N., long. 16° 5′ W. Tenerife, Canaries. 78 fathoms. Volcanic sand.

February 10, 1873. Gomera, Canaries. 75 fathoms.

This species is very abundant at the Cape Verde Islands. Kiener says it goes as far as the Cape of Good Hope, but Krauss in his very incomplete list does not give it. Some of the Gomera specimens are of a uniform ruddy-brown, with a few faint white stains. *Turritella triplicata*, which M'Andrew, through an erroneous identification, gave (*loc. cit. supra*) as a North Atlantic species, is a Red Sea species closely allied, but certainly distinct (see Laborde, Voy. Arab. Petrée, Paris, 1830, pl. lxv. figs. 11, 12). Brocchi's species of that name, and which dates from 1814, is a well-known Mediterranean form, but is altogether different.

2. *Turritella cingulifera*, Sowerby.

Turritella cingulifera, Sowerby, Tankerville Cat. App., p. xiv. No. 1442.
„ *tricarinata*, King, Zool. Journ., 1832, vol. v. p. 346, No. 55.
„ *cingulata* (*p. err.*), Kiener, p. 16, pl. x. fig. 2.
„ *cingulifera*, Reeve, Conch. Icon., vol. v. pl. xi. fig. 64.
„ *tricarinata*, Lamarck (ed. Desh.), vol. ix. p. 262, sp. 20.
„ *cingulifera*, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1878, vol. ii. p. 1, No. 1.

July 29, 1874. Levuka, Fiji. 12 fathoms.

September 7, 1874. Torres Strait, north of Australia. 3 to 11 fathoms.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, off south-west point of Papua. 28 fathoms. Green mud.

October 6, 1874. Amboyna. 15 to 25 fathoms.

Habitat.—East Indies (Sowerby), Fiji (British Museum), Torres Strait, from 6 to 30 fathoms (Brazier).

3. *Turritella exoleta* (Linne).

Turbo exoleta, Linne, Syst. Nat. (ed. 12), p. 1239, No. 644.
Chemnitz, Conch. Cab., vol. iv. p. 262, pl. clii. fig. 1424.
„ *torcularis*, Dillwyn, Cat., vol. ii. p. 869, sp. 131.
„ „ Wood, Ind. Test., p. 159, pl. xxxii. fig. 133.
Turritella exoleta, Lamarck, Anim. s. vert., vol. vii. p. 58, and (ed. Desh.) vol. ix. p. 256, sp. 10.
„ „ Kiener, Iconog., p. 37, sp. 30, pl. vii. fig. 2.

Turritella exoleta, Deshayes, Encycl. méthod., vers, vol. iii. p. 1102, sp. 5.
" " Reeve, Conch. Syst., vol. ii. p. 172, pl. ccxxiv. fig. 3.
" " Reeve, Conch. Icon., vol. v. pl. vi. fig. 22.
Turbo exoleta, Hanley, Ipsa Linn. Conch., pp. 348, 534.
Turritella exoleta, Fischer, Cat. Coq. Guadaloupe, Revue coloniale, 1858, p. 11, sp. 1.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Habitat.—Guinea (Deshayes) and Martinique (Reeve, Kiener, and British Museum); Guadaloupe (Fischer).

According to Mr Hanley, *Turbo exoletus*, Linne, is really the *Turritella bicingulata*, Lam., which is the more in want of a satisfactory name, because *Turbo cinctus*, Donovan, has priority over Lamarck's name. At the same time, Linne quotes Bonanni (Recreatio, p. 126, fig. 113) alone for his *Turbo exoletus;* and Bonanni's figure, it would appear, undoubtedly represents not *Turritella bicingulata*, Lam., but *Turritella exoleta, auctorum*. In these circumstances, Mr Hanley proposes to let things alone, and I have, hesitatingly, followed him.

4. *Turritella fascialis*, Menke.

Turritella fascialis, Menke, Synop. Method. Moll., 1830 (ed. 2), p. 45, No. 138.
" " Reeve, Conch. Icon., 1849, vol. v. pl. x. fig. 47.
" *gracillima*, Gould, Otia, 1861, p. 140.
" *fascialis*, E. A. Smith, Japan Gasteropoda, Ann. and Mag., 1875, p. 19, No. 69.

July 29, 1874. Levuka, Fiji. 12 fathoms.
September 8, 1874. Cape York, off Albany Island, Torres Strait. 3 to 12 fathoms.

Habitat.—Fiji (British Museum); Japan, 6 fathoms (E. A. Smith).

5. *Turritella fastigiata*, Adams and Reeve.

Turritella fastigiata, Adams and Reeve, "Samarang," 1840, p. 48, sp. 8, pl. xii. fig. 9.
" " Reeve, Conch. Icon., vol. v. pl. x. fig. 48.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, off south-west point of Papua. 28 fathoms. Green mud.
Station 189. September 11, 1874. Lat. 9° 36′ S., long. 137° 50′ E. West of Cape York, south-west of Papua. 25 fathoms. Green mud.

Habitat.—China Sea (Adams and Reeve).

6. *Turritella knysnaënsis*, Krauss.

Turritella knysnaënsis, Krauss, Südafrik. Moll., p. 106, pl. vi. fig. 9.

December 1873. Simon's Bay, Cape of Good Hope. 15 to 20 fathoms.

Habitat.—The Cape of Good Hope (Krauss).

7. *Turritella rosea*, Quoy and Gaimard.

Turritella rosea, Quoy and Gaimard, "Astrolabe," Zool., vol. iii. p. 136, pl. lv. figs. 24–26.
" " Lamarck, Anim. s. vert. (ed. Desh.), vol. ix. p. 260, sp. 16.
" " Kiener, Iconog., p. 32, sp. 25, pl. xii. fig. 2.
" " Reeve, Conch. Icon., vol. v. pl. viii. fig. 41.
" " Hutton, Marine Moll. New Zealand, p. 29, No. 119.
" " v. Martens, Crit. List Moll. New Zealand, p. 27.
" " Hutton, Manual, p. 83.

Station 167A. June 27, 1874. Lat. 41° 4′ S., long. 174° 19′ E. Queen Charlotte Sound, near Long Island. 10 fathoms. Mud.

Habitat.—New Zealand (Quoy and Gaimard, &c.)

8. *Turritella sinuata*, Reeve.

Turritella sinuata, Reeve, Conch. Icon., vol. v. pl. xi. fig. 62.
" " Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 210, No. 151.

April 17 and 18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
May 1874. Port Jackson, Sydney. 6 to 7 fathoms.
Station 163B. June 3, 1874. Lat. 33° 51′ 15″ S., long. 151° 22′ 15″ E. Port Jackson, Sydney. 30 to 35 fathoms. Hard ground. Bottom temperature, 63°·0.

Habitat.—Port Jackson (Angas).

This species is smooth like *Turritella gunnii*, Reeve, but the whorls here are of slower increase longitudinally, are broader, the suture is less oblique and less deep, not being bordered by the projecting carina, which in that species appears at the top and bottom of each whorl.

9. *Turritella cordismei*, Watson (Pl. XXIX. fig. 1).

Turritella cordismei, Watson, Prelim. Report, pt. 6, Journ. Linn. Soc. Lond., vol. xv. p. 224.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

Shell.—A very narrow cone, ending in a small, slightly swollen, rounded, and depressed point, rather glossy, of a suffused yellowish-brown colour with ruddy spots. *Sculpture:* Longitudinals—there are many fine, close-set, deeply-curved lines of growth. Spirals—on the edge of the base there are two strongish flattish threads, the lower a little contracted within the other; they are parted by a flat open furrow, in the bottom of which runs a fine thread: similar to this last, there are about six equally parted spiral threads on the side of the whorls, and about seven, closer set, on the base; besides these there are several finer ones. The microscopic spirals of the genus are sharp and distinct. *Colour*

a suffused yellowish-brown, with small ruddy-brown and white flecks on the upper part of the whorls. The apex is glassy white. The whole shell is rather polished. *Spire* high and perfectly conical. *Apex* consists of 1½ small, rounded, slightly tumid and depressed whorls. *Whorls* 12 (but the shell is not full-grown); they are a little convex on the side, with a slight gradual rounded contraction into the suture above and below; but the convexity is less on the earlier whorls. The edge of the base is faintly contracted and bluntly angulated; the base is a little convex and but slightly conical. *Mouth*, &c., not fully developed. The generic sinus on the outer lip is a deep semi-oval. H. 0·44 in. B. 0·13, least breadth 0·12. Penultimate whorl, height 0·07. Mouth, height 0·1, breadth 0·08.

With some resemblance to *Turritella philippensis*, this species is much smaller, and differs entirely in sculpture and in the form of the whorls and shape of the apex.

10. *Turritella austrina*, Watson (Pl. XXIX. fig. 2).

Turritella austrina, Watson, Prelim. Report, pt. 6, Journ. Linn. Soc. Lond., vol. xv. p. 224.

Station 144A. December 26, 1873. Lat. 46° 48′ S., long. 37° 49′ 30″ E. Off Marion Island, Prince Edward Island. 50 to 100 fathoms. Volcanic sand.

Station 149D. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Shell.—Conical, with rounded whorls basal angle and base, a deeply impressed suture, a fine tapering point, a round mouth, two strong spiral threads on each whorl, and with a very distinct yellow epidermis. *Sculpture:* Longitudinals—there are many fine, faint, close-set, semicircular lines of growth preserving the curve of the labral sinus. Spirals—there are two strong rounded threads about one-third of the whorl's height apart; they are nearly equally prominent and angulate the whorls, strongly in the earlier, less so in the later stages of growth. Between these is a shallow open furrow, in the middle of which is a fine narrow thread; one or two similar threads lie remotely on the upper slope of the whorl, where it contracts gradually into the suture; one spiral thread of the same kind lies in the open furrow, which abruptly contracts the bottom of the whorl into the suture. The edge of the base is contracted and rounded, with a strong spiral thread which meets the outer lip; the base is smooth but for the sharp and very strong generic spiral lines which cover the whole surface and are not microscopic, being easily seen with a lens. *Colour* porcellanous white under the straw-yellow epidermis. *Spire* high and conical; but its profile lines are deeply interrupted by the strongly contracted sutures. *Apex* drawn out to a fine, prominent, but rounded and slightly tumid point. *Whorls* 12, well rounded, with a slight double carination; the two carinating threads lie nearer the bottom of the whorl; they are separated by a shallow furrow: beneath the under one the whorl is sharply contracted into the suture, while from the upper keel the whorl slopes by a

regular curve into the superior suture. The first 6 or 7 whorls are markedly smaller than those which follow. The base is round and rather prominent. *Suture* fine, but strongly marked by the contraction above and below. *Mouth* rather small, round. *Outer lip* slightly advancing on the edge of the base, somewhat open, very slightly angulated at the lower outer corner, a very little flattened on the base, patulous, and a little angulated at the point of the pillar. *Inner lip* crosses the body and coils round the base of the pillar as a very thin glaze. *Pillar* a little oblique, curved, patulous, sharp, and with a distinct twist on the edge. *Epidermis* very distinct, thin, membranaceous, and marked with the fine generic spiral lines; it is very caducous. In drying it seems to have risen through contraction, so as to remain attached to the summit of the spirals, while it stretches across the intervening furrows. *Operculum* small, darkish brown, of very many flanged whorls. H. 0·8 in. B. 0·25, least 0·21. Penultimate whorl, height 0·12. Mouth, height 0·18, breadth 0·15.

This species is very like our British *Turritella terebra*, Linne, but is stumpier in form, smaller, with a much more impressed suture, and fewer spiral threads. Than *Turritella hookeri*, Reeve, Antarctic Expedition, this is also much stumpier, the apex is rounder and blunter, and the suture is deeper. Than *Turritella pagoda*, Reeve, from which it also differs in form and suture, it is distinguished by a finer apex, and in that the second spiral thread is much weaker than in the Challenger species. Than *Turritella knysnaensis*, Krauss, it differs in being stumpier, with a finer drawn and yet at last abrupter apex. It extremely resembles *Turritella duplicata*, Linne, but in form is stumpier, and the spiral threads are fewer. *Turritella triplicata*, Broc., has also more strong, and very many more fine, spirals.

11. *Turritella deliciosa*, Watson (Plate XXIX. fig. 3).

Turritella deliciosa, Watson, Prelim. Report, pt. 6, Journ. Linn. Soc. Lond., vol. xv. p. 226.

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Raine Island, Cape York, North Australia. 155 fathoms. Coral sand.

Shell.—Conical, porcellanous glossy white, with bicarinated contracted whorls and impressed suture, rounded base, blunt rounded and slightly tumid apex. *Sculpture:* Longitudinals—there are very many, irregular, close-set, fine, strongly curved lines of growth, which preserve the curve of the labial sinus. Spirals—each whorl is carinated by two strong, broad, rounded threads, of which the lower lies about one-fourth of the height of the whorl above the inferior suture, while the upper is slightly nearer the superior suture. Close above each is a minute thread which is like the shadow of the others. Between the two keels the surface of the whorl is impressed by a broad, shallow, rounded furrow, in the bottom of which is a spiral thread intermediate in strength between the keels and their shadows. On the base there are about nine small spiral threads, the innermost of which are feebler than the rest; they are parted by slight shal-

low furrows which are narrower than the threads. The generic microscopic fretting can only be made out in peculiarly good light; but, though very faint, it is certainly present in the furrows. *Colour* porcellanous, almost hyaline. *Spire* conical, drawn out, the profile lines just a little interrupted by the carinations of the whorls. *Apex* small, consisting of two embryonic whorls, perfectly rounded, not depressed, slightly tumid, hyaline. *Whorls* 12, of very slow and regular growth, prominent at the keels, but contracted above and below and in the middle. The last is round and prominent on the base, in the centre of which it is impressed in an open umbilical pit. *Suture* very fine and inconspicuous; towards the end of the last whorl it is very deeply sunk, from the contraction of the outer lip upon the base. *Mouth* small, rectangularly triangular, the right angle being at the base of the pillar. *Outer lip* advances a good deal at its junction with the base, and is drawn in very much toward the base of the pillar, so that at this point its direction is very nearly at right angles to that of the shell's axis, curving a little, and retreating into the labral sinus; it here meets the nearly straight line of the patulous and prominent basal lip, which almost forms a sinus at the point of the pillar. *Inner lip* carried as a thin glaze across the body and round the base of the pillar, so as almost to form an umbilical chink behind it. *Pillar* perpendicular, straight, with a slight twisted swelling at about one-third of its length; the edge is very thin and narrow, flat, patulous, and projecting at the side of the pillar as a small ledge. H. 0·35 in. B. 0·085, least 0·072. Penultimate whorl, height 0·038. Mouth, height 0·053, breadth 0·055.

This very beautiful little shell has some features which recall *Bittium;* but it has not a distinct canal at the point of the pillar, and it has the labral sinus of *Turritella* as well as the peculiar microscopic spiral fretting of the genus, though this feature is very obsolete. It has, on the other hand, some features of strong individual peculiarity which separate it from any *Turritella* known to me. These are its pure hyaline porcellanous colour, its peculiar triangular mouth, and the *Vertagus*-like swelling on the pillar-lip, which, however, is not to be found in the earlier stages of growth, as no trace of it appears in the many broken specimens. In general aspect it somewhat resembles *Cerithiopsis Concatenata*, Conti (= *Cerithiopsis pulchella*, Jeffr., *nec* C. B. Adams); but that species is much more attenuated and ends in a sharp apex, has three strong spiral threads, and is longitudinally ribbed.

12. *Turritella admirabilis*, Watson (Pl. XXIX. fig. 5).

Turritella admirabilis, Watson, Prelim. Report, pt. 6, Journ. Linn. Soc. Lond., vol. xv. p. 227.

March 7, 1875. Admiralty Islands, north-east of Papua. 16 to 25 fathoms.

Shell.—Conical, with a very slight convexity, angulated at the edge of the hollowed base, with a shallow impressed suture; whorls a little rounded, slopingly shouldered above with a broad open labial sinus. *Sculpture:* There are very faint sharp curved lines of growth, strongest, as usual, on the base. Spirals—besides the bluntly angulated and slightly swollen basal carina, which appears as a slight projection above the suture at the

base of each whorl, there are two threads whose prominence slightly carinates each whorl; they nearly trisect the whorl, but that the highest is a little more than a third of the whorl's height below the suture. There is another thread as broad, but less prominent, halfway between the lowest carinal thread and that above the suture; another, narrower, appears less than halfway between the upper carinal thread and the suture. On the upper whorls the upper carinal thread becomes much the most dominant and angulates the whorls. Besides these, the surface is closely covered with unequal, fine, flat-topped threads parted by very narrow square-cut furrows. There are of these threads about fifty above the basal carina of the last whorl. On the base there are about the same number, or rather more, of similar threads; but the furrows are opener and shallower. Of these basal threads some six or seven are rather stronger than the rest. They are all a little interrupted on the base by the radiating lines of growth. Besides these lines, the whole surface is exquisitely fretted with delicate, close-set, microscopic spirals (of which about four go to $\frac{1}{1000}$ of an inch), and much more coarsely scored with longitudinal bars (about $\frac{1}{1000}$ of an inch apart), which in the furrows of the larger system of spirals appear like the sharp edges of very thin lamellæ, and which are probably in some way connected with the epidermis of the shell. The whole of this microscopic system of sculpture is present on the base. *Colour* porcellanous white, irregularly stained with suffused streaky blotches of ruddy brown, which appear as minute sparse specks on the carinal threads and on the base. *Spire* is high, narrow, and slightly scalar. *Apex* is broken. *Whorls:* There have evidently been 16 to 17 (but the first two or three are gone), of very regular increase; a few near the apex are angulated in the middle, but all the others are concavely and slopingly shouldered below the suture, somewhat straight in the middle, and slightly contracted below, where they project a very little at the suture beyond the top of the succeeding whorl. The edge of the slightly concave and barely conical base is right-angled. *Suture* defined only by the small ledge which projects above it. *Mouth* square, bluntly pointed above, and rounded on the outer lip. *Outer lip* advances a little on the edge of the base, bends outwards and is a little patulous to the upper carination, from which point it runs straight to the outer lower angle, is flat across the base, and is patulous and slightly channelled towards the point of the pillar, which it runs beyond. The generic sinus is a mere open concave curve. *Inner lip* crosses the body more as a polish than a glaze. *Pillar* perpendicular, white, with a slight twist, narrow, and with a flattened and patulous rather than reverted edge. H. 1·55 in. B. 0·47, least 0·46. Penultimate whorl, height 0·23. Mouth, height 0·25, breadth 0·23.

This species is in form very like *Turritella conspersa*, Adams and Reeve, from the China Sea; but that has the lirations equal, the whorls are more angulated, and the angulation is not formed, as in *Turritella admirabilis*, by a thread, but by a swelling in the whorl itself. The sculpture extremely resembles *Turritella bicolor*, Adams and Reeve, China Sea; but that is in form very much more attenuated, has the suture much deeper, and the individual whorls are higher in proportion to their breadth.

13. *Turritella lamellosa*, Watson (Plate XXIX. fig. 6).

Turritella lamellosa, Watson, Prelim. Report, pt. 6, Journ. Linn. Soc. Lond., vol. xv. p. 229.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

Shell.—Like a *Terebra* in sharpness and slimness, perfectly conical, angulated at the edge of the base which is flattish, thin, translucent, and very pale-coloured, with a strong, concavely curved, open, labial sinus. *Sculpture:* There are very many close-set, distinct, curved lines of growth, each of which is produced into a small, thin, sharp, appressed lamella. Spirals—above each suture the superior whorl projects in a slight rounded swelling, which slopes gradually outwards on its upper side, is slightly angulated at its greatest projection, and there defined by a fine thread, from which point it is suddenly, but not quite sharply, contracted into the suture. In some specimens this suprasutural swelling is very slight, being checked by a shallow open constriction which lies immediately above. The rest of the whorl is covered by a series of fine threads and shallow open furrows, 6 to 10 or 12 in number, varying much in strength and distance. Besides this larger system of sculpture, the whole surface (lamellæ and all) is fretted with the most delicate microscopic spiral ridges and furrows, which are faintly crimped longitudinally. The apical whorls are pretty sharply carinated and angulated about the middle, and are otherwise almost perfectly polished. *Colour* yellow ashy white, with a few faint, suffused, small, ruddy blotches, chiefly on the spiral threads, but sometimes continuously curvedly longitudinal. The upper part of the spire is uniform white or ruddy. *Spire* high, narrow, and sharp, with straight profile lines. *Apex* glossy, porcellanous. The last $2\frac{1}{2}$ whorls contract rather suddenly to the very small, sharply rounded, and prominent point. *Whorls* 16, perfectly flat, with a tendency to angular convexity in the earlier ones, of very regular and gradual increase; the last is bluntly angulated on the edge of the base, which is conical and slightly convex. *Suture* linear and very feebly impressed, defined by the slight swelling of the base of the superior whorl. *Mouth* small, square-shaped, but higher than broad. *Outer lip* advances somewhat where it springs from the base, and is here a little drawn in from the edge; it advances with a slight curve, and is a little patulous toward the outer lower corner, is flat across the base, and advances rather beyond the point of the pillar, where there is a slight open canal. The generic sinus of the outer lip is semicircular. *Inner lip:* a flat, but distinct, porcellanous white callus crosses the body-whorl and spreads, but with decreasing thickness, round the base of the pillar. The *pillar* is narrow, rounded, and perpendicular. H. 1·3 in. B. 0·3, least 0·29. Penultimate whorl, height 0·18. Mouth, height 0·19, breadth 0·16.

Turritella gunnii, Reeve, from "Van Diemen's Land," has a much coarser spire, a deeper suture, and the angle of the base more rounded. In general aspect *Turritella declivis*, Adams and Reeve, is not unlike, but the Challenger species is of more rapid increase, has not the same projection above

the suture, and the whole details of sculpture are different; but the specimens of *Turritella declivis* in the British Museum from the China Sea are in very bad condition. It has some resemblance to *Turritella monilifera*, Adams and Reeve, "China Sea," but is a thinner shell, not so fine toward the apex, and the upper whorls want the angulation of that species. *Turritella congelata*, Adams and Reeve, China Sea, is a species with which I was very anxious to compare this, the general form (though not the sculpture) appearing very similar, but that species is not in the British Museum. Having after diligent search failed to find it there, I wrote to Mr E. A. Smith on the subject, and he confirmed my conviction of its absence.

14. *Turritella runcinata*, Watson (Pl. XXX. fig. 3).

Turritella runcinata, Watson, Prelim. Report, pt. 6, Journ. Linn. Soc. Lond., vol. xv. p. 218.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

Shell.—Broadly conical, a little rounded at the basal angle and on the base, thinnish, translucent, and speckled, with a distinct suture and a deep labial sinus. *Sculpture:* Longitudinals—the surface is closely covered with very fine and strongly curved lines of growth, which on the base are stronger and radiate very straight, but interruptedly, out from the centre. Spirals—there are on each whorl two strongish, but rounded and somewhat ill-defined, carinations: of these, the lower and stronger lies about one-fifth of the whorl's height above the suture; the upper and less definite lies a little more than halfway between the lower carina and the superior suture; between these two carinas, but nearer the upper one, lies a thread with almost enough of prominence to form a third carina, and this one sometimes supersedes the upper carina altogether. Besides these, the whole surface is sharply fretted with fine, rounded, unequal, irregular, interrupted, spiral threads, of which a considerable number are stronger than the rest, especially those toward the base of the whorls are so. The microscopic spiral frettings, which are distinct from these and very much more minute, are present, but want sharpness. The upper whorls are smooth and polished. *Colour* yellowish, more or less tinged and speckled with brown and white. The white is strongest toward the top of the whorls and is in suffused patches; the brown, which also occurs in suffused patches, is prettily dotted in minute specks on the spiral threads. The colour pales on the upper whorls, but the apex is yellow. *Spire* very perfectly conical, though the contour-lines are interrupted by the projection of the inferior carina and by the impression of the suture. *Apex* very fine and small, but rounded, the extreme tip being a little depressed on one side and the first whorl towards its end projecting a very little beyond the second. *Whorls* 15, almost flat, with a constriction between the two carinas, narrowed gradually upwards, but more quickly into the inferior suture, roundly angulated at the basal edge, with a flattish base which is but feebly conical. The last four or five whorls are higher proportionally than the earlier, which are of very slow and gradual increase; the first two are markedly smaller than those which

follow; all the earlier whorls are distinctly convex. *Suture* fine, but distinct. *Mouth* rather small, almost square, but a little higher than it is broad. *Outer lip* very straight, roundly angulated below, patulous and almost canaliculate at the pillar-point; it advances a good deal at its junction with the preceding whorl, from which point it retreats so as to form a very deep and narrow sinus, the upper edge of which lies along the upper carina, and whose apex occupies the depression between the upper and lower carina. The lower edge of this sinus advances in a line much more oblique than its upper edge, which is almost parallel to the suture; it is the deep curve of this sinus which bends the lines of growth into so strong a curve as they cross the whorls. *Inner lip* is spread across the body as a thin glaze; it thickens a little toward the base of the pillar, round and behind which it spreads, so as to leave a minute umbilical pore. *Pillar* is very straight in the line of the axis, but is bent backwards more than is usual in the genus; its edge is narrow, rounded above, with a brilliant milky glaze, slightly reverted and sharp below, and ending in a fine point. H. 1·25 in. B. 0·4, least 0·38. Penultimate whorl, height 0·18. Mouth, height 0·28, breadth 0·22.

This resembles the *Turritella sinuata*, Reeve; but in that the apex is much finer, the earlier sutures much shallower, and the whorls of much slower increase. It is extremely like some specimens in the British Museum, on a tablet numbered "906. Bass Strait," and on the back of which there is written "45 fms., coarse sand and dead shells;" but they are, I think, distinct. In many respects it recalls the well-known Mediterranean and Atlantic species *Turritella triplicata*, Broc.; but it is a smaller and more delicate species than that, and the finer spiral sculpture is very much more delicate and irregular.

15. *Turritella accisa*, Watson (Pl. XXX. fig. 4).

Turritella accisa, Watson, Prelim. Report, pt. 6, Journ. Linn. Soc. Lond., vol. xv. p. 220.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

Shell.—Subulate, a very little contracted at the edge of the flattish and little conical base, thinnish, speckled, with a strongly furrowed suture, on the lip a deep sharp sinus.

Labral sinus of *Turritella accisa*, Watson.

Sculpture: The surface is closely covered with very fine sharp scratches on the highly curved lines of growth, which are specially crisp on the base, where they are flexuous and unbroken. Spirals—there are on the last whorl two keels, one near (about 0·04 in. from) the top, the other a little further (about 0·05 in.) from the bottom of the whorl: both are blunt roundly swollen bands defined by the sutural contraction, but the upper one is slightly the sharper; the under one is the stronger and better defined, the sutural contraction below it being more abrupt instead of presenting the mere sloping shoulder which lies between the upper band and the suture. Between these two carinations the slightly impressed surface is scored by several threads and furrows, of which sometimes

one, sometimes two, are stronger than the rest. Similar threads, but with feebler furrows, occupy the suprasutural contraction, the suture being marginated on its upper side by a small slightly swollen band; where the suture ceases at the upper corner of the mouth, this band forms the roundly angulated edge of the base, strongly defined by the furrow which lies above it. Besides these stronger spirals, the whole surface is irregularly scored with fine spiral threads. Towards the apex the minuter sculpture disappears, the two keels lose their prominence, and the whorls are sharply carinated by one of the intermediate threads; the first two whorls are smooth. *Colour* a brownish yellow, with ruddy spots of undefined outline. These spots on the keels are large, on the intermediate threads they are small; they follow in their direction the curves of growth; the upper part of the spire and the middle of the base have a suffused stain of this colour. *Spire* is high, narrow, and perfectly conical. *Apex* very fine, ending in a minute, transparent, glassy knob, which is not in the least depressed or spread out. *Whorls* 15 to 16, of very gradual increase, almost flat on the sides, with a strong constriction below and a more gradual contraction above; the upper whorls are angulated. There is a slight contraction, and within that an angulation round the edge of the base, which is flattish and slightly conical. The first two are hyaline. *Suture* sharp and strongly defined. *Mouth* rather large, almost round. *Outer lip* scarcely advancing, sweeping freely out with a rounded curve from the body to the pillar, and rather patulous throughout, especially at the point of the pillar, where there is a slight canal. Between the two keels there is a deep V-shaped sinus, the form of which is preserved in the curves of growth. *Inner lip* is spread as a thin brown glaze, which just encompasses the base of the pillar. The *pillar* is narrow, rounded, with the lip-edge just turned back on it; it is curved and rather bent backward; the basal lip sweeps out beyond the point of it. H. 1·15 in. B. 0·34, least 0·31. Penultimate whorl, height 0·18. Mouth, height 0·21, breadth 0·17.

There are unnamed specimens of this species on a tablet in the British Museum numbered "924B. Bass Strait, 40 fms." It is very like *Turritella pagoda*, Reeve; but that is a narrower shell, of slower increase, and with fewer spirals. *Turritella sinuata*, Reeve, is also slimmer and smoother, of slower increase, flatter whorls, and finer apex. *Turritella gunnii* is very like, but is smoother, and has a still deeper and more impressed suture. In general aspect of form, colour, and sculpture it resembles *Turritella conspersa*, Adams and Reeve; but the resemblance utterly disappears on closer observation. That is broader and squarer in the base, the colour is more blotchy and less suffused, the upper whorls of the spire are finer, the suture is much more impressed, and the whorls are much more angulated; it has no deep labial sinus, nor is any trace of that left on the lines of growth. The *Turritella incisa*, Tenison Woods, 45 fathoms, from Port Jackson, has the deep narrow sinus of this species, but seems to be a much smaller shell relatively to the number of whorls, 11 millims. to 13 whorls being his measurement. *Turritella accisa* differs from *Turritella runcinata*, Wats., in being smaller, narrower, suture much deeper, upper whorls angulated and sculptured, not rounded, and smooth; and the apex is much finer and sharper, and is hyaline white, while in that species it is brownish yellow and hardly translucent.

16. *Turritella carlottæ*, Watson (Pl. XXX. fig. 5).

Turritella carlottæ, Watson, Prelim. Report, pt. 6, Journ. Linn. Soc. Lond., vol. xv. p. 222.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

Station 167A. June 27, 1874. Lat. 41° 4′ S., long. 174° 19′ E. Queen Charlotte Sound, New Zealand. 10 fathoms. Mud.

Shell.—High, narrow, conical, thin, translucent, with fine ruddy spiral threads, a slightly impressed suture, and an angular flattened base. *Sculpture:* Longitudinals—there are fine, thread-like, close-set curved lines of growth. Spirals—there are two principal, two secondary, and very many minor spirals; but the relative value of these varies a good deal; they are little raised, but distinct. The base is covered with fine crowded spirals, of which those near the edge are stronger than the rest. The microscopic system of spirals is fine, sharp, and distinct. *Colour* yellowish ashy white, with a suffused ruddy brown on the upper part of the whorls, and a stronger shade of the same colour defining the more important spirals. The colour becomes altogether paler up the spire, and the apex is white. *Spire* very perfectly conical; but the profile lines are interrupted by the impressed sutures. *Apex* small, rounded, smooth and glossy, consisting of $1\frac{1}{2}$ embryonic whorls; the next whorl is slightly angulated, after which the regular sculpture begins. *Whorls* 15, very slightly convex on the sides, contracting gradually upwards into the suture; towards the bottom of the whorls the contraction into the suture is shorter, straighter (*i.e.*, less convex), and more rapid; they are of very gradual and regular increase. Towards the upper part of the spire the curve of the profile line of each whorl becomes increasingly stronger. The base is flat, very slightly conical, sharply angulated, and not contracted at the edge. *Suture* very slight, but well defined. *Mouth* small, angularly rounded, a little higher than broad. *Outer lip* is a little drawn in and advancing on the edge of the base, descends straight to the lower outer angle, is flat across the base, and a little patulous in front of the pillar-point. The generic sinus in the outer lip is parabolic in form. *Inner lip:* there is not (though the specimens are full-grown) even a glaze across the body nor round the base of the pillar; but on older specimens this may probably exist. *Pillar* is a little concave, rather direct, with a thin rounded edge. *Epidermis* is a very thin and delicate calcareous membrane, obviously not extraneous; it adheres to the top of the spirals and stretches across their furrows. It is sparsely cleft by minute gaping rents in the direction of the lines of growth, and the microscopic sculpture of the shell is traceable in it, but rather on its under than its upper surface. H. 0·95 in. B. 0·28, least 0·25. Penultimate whorl, height 0·15. Mouth, height 0·16, breadth 0·14.

This species has some resemblance, both in form and sculpture, to *Turritella knysnaensis*, Krauss, but it is narrower, suture less impressed, whorls not so convex; the embryonic apex is very like, but in the Challenger species it is a little more swollen and depressed.

17. *Turritella philippensis*, Watson (Pl. XXX. fig. 6).

Turritella philippensis, Watson, Prelim. Report, pt. 6, Journ. Linn. Soc. Lond., vol. xv. p. 223.

Station 161. April 1, 1874. Lat. 38° 22′ 30″ S., long. 144° 36′ 30″ E. Off entrance to Port Philip, South Australia. 33 fathoms. Sand.

Shell.—A narrow cone ending a little abruptly in a sharp point, profile lines straight, base angulated and flat, of a suffused brown colour with longitudinal brown flecks. *Sculpture:* Longitudinals—fine, numerous, close, much-curved lines of growth. Spirals—there is a slight angulated swelling at the top and bottom of each whorl (that at the top being rather nearer the suture than that at the bottom); between these the surface of the whorl is slightly concave, with a flat feebly projecting band in the middle, the upper and lower edge of which is defined by a spiral thread; besides these spirals, which are absent in the upper whorls, the whole surface is marked by irregular and unequal narrow and almost obsolete spiral threads, which are stronger on the base. The generic microscopic spirals are strong, but without delicacy or depth. *Colour* ruddy light brown, with darker longitudinal curved flecks; on the upper whorls the centre of the whorl is coloured and the top and bottom is white; the three apical whorls are porcellanous white. *Spire* perfectly conical in its profile lines. *Apex:* the last whorl contracts suddenly and rises in a fine rounded, but almost sharp point. *Whorls* 11; but the shell is not full-grown. They are almost flat on the sides, with a slight angular contraction into the suture above and below; the flat base is angulated at the edge and is a little conical. *Suture* is slightly impressed by a shallow broadish angular depression. *Mouth, outer* and *inner lip*, and *pillar* are not fully developed. The generic sinus is parabolic in shape. H. 0·61 in. B. 0·19, least 0·17. Penultimate whorl, height 0·12. Mouth, height 0·13, breadth 0·1.

This species is somewhat like *Turritella sinuata*, Reeve, but is a narrower shell with higher whorls, which are less convex; the apical whorls are much larger, and the apex itself sharper and more prominent.

18. *Turritella* (*Eglisia*) *tricarinata*, Adams and Reeve.

Eglisia tricarinata (not *Turritella tricarinata*, Brocchi, nor that of King), Adams and Reeve, "Samarang," 1840, p. 49, pl. xii. fig. 8.

„ „ Reeve, Conch. Icon., vol. v. pl. i. fig. 3.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Off Malanipa Island, Basilan Strait, Philippines. 10 to 20 fathoms. Sand.

Habitat.—China Sea (Adams and Reeve).

It did not seem right to disturb this name, but it is obvious that if *Eglisia* is to reckon merely as a subgenus the specific name cannot be retained in the face of its previous use by Brocchi and by King for two quite differen[illegible]

Family PYRAMIDELLIDÆ, Gray.

Genera. 1. *Pyramidella*, Lamarck. 2. *Odostomia*, Fleming. 3. *Eulimella*, Forbes. 4. *Mathilda*, Semper. 5. *Dunkeria*, Carpenter. 6. *Aclis*, Loven. 7. *Eulima*, Risso. 8. *Mucronalia*, A. Adams. 9. *Stilifer*, Broderip.

1. *Pyramidella*, Lamarck, 1796.

Pyramidella nodicincta, A. Adams.

Pyramidella nodicincta, A. Adams in Sowerby's Thes. Conch., pt. 15, vol. ii. p. 813, sp. 6, pl. clxxii. fig. 5.
„ „ Reeve, Conch. Icon., vol. xv. pl. iii. fig. 19.
„ „ Chenu, Manuel, vol. i. p. 221, fig. 1228.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Philippines (Reeve).

2. *Odostomia*, Fleming, 1828.

Species.

1. *Odostomia nitens*, Jeffr.
2. *Odostomia rissoïdes*, Hanley.
3. *Odostomia turrita*, Hanley.
4. *Odostomia unidentata*, Mont.
5. *Odostomia convoluta*, n. sp.
6. *Odostomia hyphala*, n. sp.
7. *Odostomia corpulenta*, n. sp.
8. *Odostomia oxia*, n. sp.
9. *Odostomia scopulorum*, n. sp.
10. *Odostomia oödes*, n. sp.
11. *Odostomia pupa*, n. sp.
12. *Odostomia kymatodes*, n. sp.
13. *Odostomia* (*Obeliscus*) *nitidula*, A. Adams.
14. *Odostomia* (*Parthenia*) *casta*, A. Adams.
15. *Odostomia* (*Turbonilla*) *compressa*, Jeffr.
16. *Odostomia* (*Turbonilla*) *densicostata*, Phil.
17. *Odostomia* (*Turbonilla*) *paucistriata*, Jeffr.
18. *Odostomia* (*Turbonilla*) *scalpidens*, n. sp.
19. *Odostomia* (*Turbonilla*) *philomelæ*, n. sp.
20. *Odostomia* (*Turbonilla*) *homœotata*, n. sp.
21. *Odostomia* (*Turbonilla*) *rhabdota*, n. sp.
22. *Odostomia* (*Turbonilla*) *rhabdoïdes*, n. sp.
23. *Odostomia* (*Turbonilla*) *kymatoïssa*, n. sp.
24. *Odostomia* (*Turbonilla*) *phrykalea*, n. sp.
25. *Odostomia* (*Turbonilla*) *dipsycha*, n. sp.
26. *Odostomia* (*Turbonilla*) *amœbœa*, n. sp.
27. *Odostomia* (*Syrnola*) *aciculina*, Souv.

1. *Odostomia nitens*, Jeffreys.

Odostomia nitens, J. Gwyn Jeffreys, Ann. and Mag. Nat. Hist., 1870, 4th ser., vol. vi. p. 79.
„ „ Monterosato, Enumeraz., p. 34.
„ „ J. Gwyn Jeffreys, Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1884, p. 349, sp. 12, pl. xxvi. fig. 5.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Habitat.—Off the west of Ireland, 422 fathoms; between Falmouth and Gibraltar, 257 to 690 fathoms; Mediterranean, 30 to 90 fathoms (Jeffreys).

Dr Gwyn Jeffreys identified this species for me. His types I have not seen.

2. *Odostomia rissoïdes*, Hanley.

Odostomia rissoïdes, Hanley, Proc. Zool. Soc. Lond., 1844, p. 18.
" " Forbes and Hanley, Brit. Moll., vol. iii. p. 284, pl. xcvi. fig. 4.
" " J. Gwyn Jeffreys, Brit. Conch., vol. iv. p. 122, sp. 7, vol. v. p. 211, pl. lxxiii. fig. 4.
" " Weinkauff, Conch. Mittelm., vol. ii. p. 220, sp. 8.
" " Monterosato, Enumeraz., p. 31.
" " Seguenza, Form. terz. Calabr., pp. 319, 355.
" " Dautzenberg, Moll. Golfe de Gabes, Journ. de conch., 1883, p. 348, No. 246.
" " J. Gwyn Jeffreys, Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1884, p. 348, sp. 10.

December 26–27, 1873. Lat. 46° 43′ S., long. 38° 4′ 30″ E. Between Marion Island and Prince Edward Island. 50 to 140 fathoms. Volcanic sand.

Habitat.—From Shetland to Algiers, 0 to 777 fathoms (Jeffreys); and the Mediterranean in general (Monterosato).

Fossil.—From the Upper Pliocene onwards (Seguenza).

I give this species on the authority of Dr Gwyn Jeffreys. I had remarked the shell's great resemblance in form to *Odostomia rissoïdes*, but the distinct and strong spiral sculpture which characterises it, coupled with the locality, prevented my referring it to that species.

3. *Odostomia turrita*, Hanley.

Odostomia turrita, Hanley, Proc. Zool. Soc. Lond., 1844, p. 18.
" *unidentata* (var.), Forbes and Hanley, Brit. Moll., vol. iii. p. 267, pl. xcv. fig. 9.
" *turrita*, J. Gwyn Jeffreys, Brit. Conch., vol. iv. p. 135, vol. v. p. 211, pl. lxxiv. fig. 2.
" " Monterosato, Enumeraz., p. 31.
" " G. O. Sars, Moll. Arct. Norv., p. 203, pl. xxii. fig. 10.
" " J. Gwyn Jeffreys, Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1884, p. 346, sp. 5.

February 10, 1873. Tenerife, Canaries. 70 fathoms.

(?) Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Habitat.—Vadsö, Norway, east of North Cape (Sars); Great Britain, Cattegat, France, 0 to 350 fathoms (Jeffreys); Mediterranean (Monterosato); Madeira (Watson); Tenerife (M'Andrew).

Fossil.—In the post-tertiaries of Scotland, 3 to 240 feet (Jeffreys).

In regard to the second locality above, I was doubtful in consequence of the bad condition of the specimen. My identification, however, has been confirmed by Dr Gwyn Jeffreys, than whom no one better knows the Northern Odostomias.

4. *Odostomia unidentata* (Mont.)

Turbo unidentatus, Montague, Test. Brit., vol. ii. p. 324.
Odostomia unidentata, Forbes and Hanley, vol. iii. p. 264, pl. xcv. figs. 7, 8.
" " Searles Wood, Crag. Moll., Palæont. Soc., 1856, Appendix, vol. ii. p. 317, pl. xxxi. fig. 11.
" " J. Gwyn Jeffreys, Brit. Conch., vol. iv. p. 134, pl. lxxiv. fig. 1.
" " G. O. Sars, Moll. Arct. Norv., p. 201, No. 109, pl. xi. figs. 6–8.
" " Seguenza, Formazione terz. Calabria, p. 265.
" " Dautzenberg, Coq. Golfe de Gabes., Journ. de conch., 1883, p. 348, No. 245.
" " J. Gwyn Jeffreys, Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1884, p. 346, sp. 4.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Habitat.—From Iceland to the Mediterranean, 10 to 777 fathoms (Jeffreys); from the North Cape (Sars) to Madeira (Watson); Tenerife and Western Africa (Jeffreys).

Fossil.—The Middle Pliocene of Calabria (Seguenza); the English Crag (S. Wood) the upper and lower glacial beds of Norway (Sars), and of Scotland (Jeffreys). 8 to 460 feet.

This species is represented by a single specimen in very bad condition, which might, I thought, pass for a somewhat carinated form of *Odostomia turrita*, Hanley. Dr Gwyn Jeffreys, however, parted them, and I am content to accept his identification.

I have not quoted Weinkauff (Conch. des Mittelm., vol. ii. p. 219, sp. 4) for this species, because Dr Gwyn Jeffreys expressly states that he has ascertained that Weinkauff's shell is *Odostomia pallida*, Mont.

5. *Odostomia convoluta*, n. sp. (Pl. XXXIII. fig. 8).

September 8, 1874. Flinders Passage, Cape York, North-east Australia. 7 fathoms.

Shell.—Small, thin, conical, rolled together,[1] with a smallish half-turned-over subdiscoidal sinistral tip, flat-sided barely convex conical whorls, slightly impressed suture, short rounded base, and a very small oblique pear-shaped mouth. *Sculpture:* there are feeble hair-like lines of growth, and excessively faint, close, microscopical spiral scratches. *Colour* hyaline. *Spire* high and narrow, compressed. *Apex* small, rounded, discoidal, consisting of 2½ slightly tumid whorls, which are half turned over, and one-third immersed.

[1] Hence the ... outlines.

Whorls 7 (besides those of the embryo), the last alone is long; each at the bottom contracts slightly into the suture; the base is attenuated and rounded. *Suture* slightly impressed, very oblique. *Mouth* small, oblique, narrow and pointed above, broad and rounded below. *Outer lip* slightly disjoined from the body, straight, rounded and patulous in front. *Inner lip* oblique, thick, continuous, defined, and slightly disjoined from the body, angulated at the point of the pillar. A strong blunt fold twists obliquely round the base of the pillar; a small shallow furrow above the lip-edge runs across the body. H. 0·123 in. B. 0·037. Mouth, height 0·034, breadth 0·022.

Some of the specimens of this species are shorter and narrower than others.

6. *Odostomia hyphala*,[1] n. sp. (Pl. XXXI. fig. 2).

Station 169. July 10, 1874. Lat. 37° 34′ S., long. 179° 22′ E. North-east from New Zealand. 700 fathoms. Blue mud. Bottom temperature 40°.

Shell.—Strongish, oblong, broadly conical, very slightly scalar and subumbilicate, white, with a small upturned but not sinistral tip, flat-sided conical whorls, a slightly impressed suture, a rounded shortly produced base, and a largish oblong almost direct mouth. *Sculpture:* none but flexuous strongish unequal lines of growth. *Colour* translucent white, with a rather dull surface. *Spire* conical, broad. *Apex* eroded, but apparently contracting rather suddenly to a small tip, which is slightly turned over on one side. *Whorls* 7, of rapid but regular increase; they are broad but not high; each has a slight contraction at the bottom, and above this is faintly convex and then flat-sided; at the top of the shell they project very slightly and sharply out of the suture; the last is round, with a shortly produced base. *Suture* strongish from the contraction of the whorl above it and the slight projection of the whorl below. *Mouth* rather large, oblong, pointed above and at the front of the pillar. *Outer lip* thin (somewhat broken); it is patulous on the base, and slightly guttered at the point of the pillar. *Inner lip* a mere gloss on the body, from which it runs on continuously into the pillar concealing the umbilicus; here it is very thin, patulous, and curved; the tooth is very slight, is oblique, lies deep within the mouth and close to the top of the pillar. H. 0·25 in. B. 0·117. Mouth, height 0·1, breadth 0·068.

This species is a good deal like a very full-grown *Odostomia japonica*, A. Ad., but, besides greater number of whorls, and such differences as fuller development might explain, the whorls here are less rounded, the suture shallower and more oblique, and the spire is much less scalar. It very much resembles *Odostomia polita*, Biv. *pater*, from the Mediterranean, but is a thinner shell, more tumid, with a much larger mouth and a toothless outer lip.

[1] Ὑφαλος, from under the sea.

7. *Odostomia corpulenta*, n. sp. (Pl. XXXI. fig. 3).

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Cape York, North-east Australia. 6 fathoms. Coral mud.

Shell.—Not very strong, translucent, smooth and glossy, strongly toothed, ovate, with a high conical subscalar sharp-pointed spire, a produced base, and a smallish pear-shaped mouth. *Sculpture:* there are weak, rounded lines of growth, and very obscure minute superficial close-set microscopic spirals. *Colour* white, horny, glossy. *Spire* rather high, with a convexly conical outline; the subscalar rise is caused by a very minute but rectangular projection of each succeeding whorl immediately below the suture. *Apex:* the top is small, and from it rises on one side the three-quarter reversed tip, the extreme point of which is hidden. *Whorls* 6½ in all; very slightly convexly conical, of regular but rather rapid increase; they terminate with a sharp rectangular abruptness at the suture. *Suture* almost, but not really channelled, very oblique. *Mouth* small, pear-shaped, being sharply pointed above, rounded and very patulous in front. *Outer lip* thin and sharp, straight above and a little inflected, acutely rounded and very patulous on the base. *Inner lip* thin, but defined and a little spread out on the body; from the corner of the outer lip it runs obliquely but directly to the point of the pillar, round whose top twists a small furrow, which, from behind the pillar-lip, runs in above the strong and but little oblique tooth. H. 0·194 in. B. 0·083. Mouth, height 0·082, breadth 0·049.

This species in form considerably resembles *Odostomia eburnea*, Metcalfe, from South Australia, but is larger, and the columellar tooth is not high up as in that species.

8. *Odostomia oxia*,[1] n. sp. (Pl. XXXI. fig. 4).

September 8, 1874. Flinders Passage, Cape York, North-east Australia. 7 fathoms.

Shell.—Small, narrow, conical, few-whorled, with a well-marked suture, a longish last whorl, and an upturned and immersed tip. *Sculpture:* there are many feeble lines of growth and some very faint spirals. *Colour* white. *Spire* high and narrow. *Apex* small, consisting of a whorl and a half, obliquely but very shortly drawn out, and turned over on one side. *Whorls* 5 in all; they are barely convex on the side, but are slightly constricted at top and bottom. *Suture* distinct, being a little impressed. *Mouth* small, elongately pear-shaped. *Outer lip* almost straight above; on the base obliquely rounded and patulous; pointed at the tip of the pillar. *Inner lip* rather thin on the body, obtusely angulated at the top of the pillar, where there is a strongish tooth; the pillar is concave, with a slightly reverted edge, behind which is a small furrow and umbilical chink. H. 0·08 in. B. 0·038. Mouth, height 0·031, breadth 0·02.

This species somewhat resembles an elongated form of *Odostomia acuta*,[2] Jeffr., with fewer whorls and a much stronger shell.

[1] ὀξύς, sharp. [2] Hence the name.

9. *Odostomia scopulorum*, n. sp. (Pl. XXXI. fig. 5).

July 1875. Reefs,[1] off Honolulu. 40 fathoms.

Shell.—Very small, oblong, few-whorled, tubercled, white, with a deep channelled suture, an obliquely truncated tip, and a short round base. *Sculpture:* on the lower whorls there are three strong spiral threads and three furrows; the first two threads are formed by rounded tubercles arranged in rows so as to form slightly oblique longitudinal riblets; the furrow parting the two threads is very slight; below these tubercled threads is a sharp narrow deepish furrow succeeded by a square-cut thread; somewhat stronger than the furrow is a deep square-cut channel at the suture; below this sutural furrow, on the base there are two more strong threads and furrows, the last furrow encircling the pillar. *Colour* porcellanous-white. *Spire* short, with convex outlines. *Apex* abrupt, blunt and oblique. It consists of 1½ smooth keeled whorls; the extreme tip is turned in. *Whorls* 5 in all, flat on the sides and subconical; they are all small, only the last is somewhat lengthened, having a rounded and slightly produced base. *Suture* rectangularly impressed and somewhat oblique. *Mouth* small and shortly pear-shaped. *Outer lip* sharp, straight to the edge of the base, where it is rounded and patulous. *Inner lip* strong, with a prominent edge, curved throughout its course with a strong oblique deep-set tooth about the middle. H. 0·048 in. B. 0·02. Mouth, height 0·015, breadth 0·013.

This is something like an extremely small *Odostomia excavata*, Phil., but obviously very different. It has a vague resemblance to *Oscilla ligata*, Ang. (Proc. Zool. Soc. Lond., 1877, p. 173, pl. xxvi. fig. 11), but differs in size, in sculpture, and in form of apex. There is a small shell from Station 188, west of Cape York, Australia, 28 fathoms, which probably belongs to this species, but as, though not full grown, it is linearly double the size of the Honolulu specimens, and is besides a solitary representative, I have thought it better to leave it out of account.

10. *Odostomia oödes*,[2] n. sp. (Pl. XXXI. fig. 6).

September 8, 1874. Flinders Passage, Cape York, North-east Australia. 7 fathoms.

Shell.—Small, oval, ribbed, subscalar, with a blunt sub-obliquely truncated top, an inturned tip, a slightly impressed suture, a shortly produced and rounded base, and a small mouth. *Sculpture:* Longitudinals—there are on the last whorl about 20 slightly curved rounded ribs, parted by shallow rounded furrows of about the same breadth as the ribs; they extend to the very centre of the base; there are fewer of these on the earlier whorls. Spirals—in the furrows between the ribs the whole surface is scored with fine threads and furrows. *Colour* porcellanous white. *Spire* short, subscalar, and with convexly conical outlines. *Apex:* the shell terminates abruptly in a sub-oblique line, the top being depressed and the extreme tip inverted; the first whorl and a half are smooth or at least ribless. *Whorls* 5 in all, short, a little convex; the last slightly tumid, with

[1] Hence the name [redacted]al.

a shortly produced and rounded base. *Suture* a little oblique and somewhat constricted. *Mouth* small, pear-shaped and oblique. *Outer lip* thin and sharp, shortly arched at its insertion, and then nearly straight to the base, where it is almost semicircular and barely patulous. *Inner lip* pretty thick on the body, with a strongish tooth, concave to the point of the short pillar, on which it is sharp-edged and slightly reverted, having a small umbilical furrow behind it. H. 0·064 in. B. 0·03. Mouth, height 0·023, breadth 0·021.

This species is slightly like the young shells of the very stumpy form of *Odostomia interstincta*, Mont.

11. *Odostomia pupa*,[1] n. sp. (Pl. XXXI. fig. 7).

September 8, 1874. Flinders Passage, North-east Australia. 7 fathoms.

Shell.—Cylindrical, high and narrow, few-whorled, obsoletely ribbed, with a blunt tip, a small mouth, and a toothed pillar. *Sculpture:* Longitudinals—there are very feeble rounded lines of growth; there are also on the last whorl about 20 (on the earlier fewer) flat rounded inconspicuous ribs, which die out above the periphery. Spirals—none (the shell, however, is somewhat rubbed). *Colour* porcellanous. *Spire* high and cylindrical, but toward the top convexly conical. *Apex* abrupt and truncated, the extreme point being turned in. *Whorls* in all 7; rather high, flat on the side; the last is small, but a little elongated, and on the base rounded. *Suture* slightly and linearly impressed. *Mouth* small, shortly pear-shaped. *Outer lip* almost straight in its direction, on the base rounded but barely patulous. *Inner lip* strongly continuous and straight across the body, and with a very short pillar; in the middle of the lip there is a strongish blunt tooth. H. 0·13 in. B. 0·045. Mouth, height 0·04, breadth 0·024.

This species is a good deal in the style of *Odostomia minuta*, A. Ad., from the Mediterranean, but is stumpier and larger, the obsolete ribbing is stronger, the apex is different, and the labial tooth is more marked. It is extremely like *Odostomia paucistriata*, Jeffr., but is more cylindrical (*i.e.*, less contracted toward the apex), is smaller, and is more coarsely ribbed.

12. *Odostomia kymatodes*,[2] n. sp. (Pl. XXXI. fig. 8).

September 8, 1874. Flinders Passage, Cape York, North-east Australia. 7 fathoms.

Shell.—Strong, rather long and narrow, convexly conical, ribbed, strongly toothed, with flat-sided conical whorls, an impressed suture, a rounded slightly produced base, a small oval mouth, and a blunt rounded top out of which on one side rises a small dome-shaped tip. *Sculpture:* Longitudinals—there are on each whorl about 19 strongish,

[1] So called because like the pupa of some insects.

[2] [redacted]

rounded, very crowded ribs, the parting furrows being shallow and narrow; they run pretty continuously down the spire, but are interrupted by the suture; they die out slowly on the base. Spirals—below the suture the ribs at their origin are slightly expanded so as to form a kind of collar, and there round the whorls are traces of minute spirals in the furrows of the ribs (but the specimens are somewhat rubbed). *Colour* white. *Spire* high, conical, with a slightly convex outline. *Apex:* the top is somewhat blunt, and from one side of it rises a small dome-shaped tip. *Whorls:* 7 in all; they are slightly tumid below and flatly conical above; the last has a rounded slightly produced base. *Suture* oblique, a very little impressed. *Mouth* small, oval, pointed above. *Outer lip* broken. *Inner lip* strong and defined on the body, concave out to the point of the short pillar, which has a strong tooth near its top and a slight umbilical depression behind it. H. 0·133 in. B. 0·051.

The mouth in the specimens of this shell is so much broken that no measurements are possible. There is a single specimen of an *Odostomia* from Honolulu, 40 fathoms, which may be this species, but is somewhat smaller and has shorter whorls. I have not therefore felt quite able to reckon it as the same, nor yet to part them.

13. *Odostomia* (*Obeliscus*) *nitidula* (A. Adams).

Syrnola nitidula, A. Adams, Ann. and Mag. Nat. Hist., 1860, ser. 3, vol. vi. p. 335.
Obeliscus nitidulus, A. Adams, Japan. Obeliscinæ, Proc. Zool. Soc. Lond., 1862, p. 232, sp. 5.
" " Dunker, Moll. Mar. Japon., p. 75.
Pyramidella (*Tiberia*) *nitidula*, J. Gwyn Jeffreys, Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1884, p. 363, pl. xxvii. fig. 8.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Habitat.—The Bay of Biscay, from 227 to 1095 fathoms; the Mediterranean, from 207 to 1456 fathoms (Jeffreys); Japan, 25 to 63 fathoms (A. Adams); Corea, 40 to 488 fathoms (Jeffreys).

From an examination of Dr Gwyn Jeffreys' specimens of this species, I am satisfied that those of the Challenger only differ in the fulness of their development.

14. *Odostomia* (*Parthenia*) *casta* (A. Adams).

Monoptygma casta, A. Adams, Proc. Zool. Soc. Lond., 1851, p. 223.
" " A. Adams in Sowerby's Thes. Conch., vol. ii. pt. 15, p. 818, sp. 6, pl. clxxii. fig. 22, and *Monoptygma concinna*, fig. 34.
Myonia concinna, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 225, sp. 251.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 fathoms. Sand and shells.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—China Seas (A. Adams); Port Jackson (Angas).

The types of the *Monoptygma casta*, A. Adams, and *Monoptygma concinna*, A. Adams, preserved in the British Museum, are identical. The former name being the older is that which should be preserved. As to the generic name *Myonia*, Dana introduced it in 1847 (Amer. Journ. Sci. and Arts, vol. iv. p. 158). Then in 1848 (*ibid.*, vol. v. p. 438) he seems to have changed it to *Mœonia*, but by it he described a "genus (fossil?) *Astartidarum*." Then in 1860 (Ann. and Mag. Nat. Hist., p. 406) A. Adams introduced *Myonia* without any reference to Dana. "This genus," he says, "will include most of the species described by me as belonging to *Monoptygma* in Sowerby's Thesaurus, and should be placed in the family *Actæonidæ*." He gives no reason for this opinion.

15. *Odostomia* (*Turbonilla*) *compressa*, Jeffreys.

Odostomia (*Turbonilla*) *compressa*, J. Gwyn Jeffreys, Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1884, p. 360, sp. 43, pl. xxvii. fig. 5.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of Azores. 1000 fathoms. Pteropod ooze. Bottom temperature 39°·4.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Habitat.—Atlantic, between Falmouth and Gibraltar, from 72 to 1095 fathoms; Mediterranean, near Gibraltar, 586 fathoms; Gulf of Marseilles, west coast of Africa, and the Cape Verdes, 363 to 1622 fathoms (Jeffreys).

The Challenger representatives of this species consist of the upper half of the shell from the second station, and the lower half from the first. Dr Gwyn Jeffreys identified them for me with his species, which I have not seen.

16. *Odostomia* (*Turbonilla*) *densicostata* (Philippi).

Chemnitzia densicostata, Philippi, Enumeratio, vol. ii. p. 137, sp. 5, pl. xxiv. fig. 9.
Turbonilla densicostata, Weinkauff, Conch. Mittelmeer., vol. ii. p. 210, sp. 6.
Odostomia (*Turbonilla*) *densicostata*, Monterosato, Enumeraz., p. 34.
Pyrgostalis densicostata, Monterosato, Nomenclatura, p. 90.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—The Mediterranean (Philippi).

Fossil.—Postpliocene of Italy (Philippi).

There are three unnamed specimens in the British Museum with which I identified this species, which I now reckon to *Odostomia densicostata*, on the authority of Dr Gwyn Jeffreys. Philippi's types I have not seen; but I had accepted the general opinion that the species was a mere variety of *Odostomia rufa*, Phil., and that I felt sure the Challenger species was not. Philippi's figure (*loc. cit. supra*) certainly does not suggest *Odostomia rufa* and the Marquis of Monterosato now holds that they are really distinct.

17. *Odostomia* (*Turbonilla*) *paucistriata*, Jeffreys.

Odostomia (*Turbonilla*) *paucistriata*, J. Gwyn Jeffreys, Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1884, p. 361, sp. 44, pl. xxvii. fig. 6.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—Mediterranean, 40 to 65 fathoms; Bay of Biscay; west coast of Africa; (Jeffreys).

Dr Gwyn Jeffreys suggests some doubts of the distinctness of this species from *Odostomia compressa*, Jeffr. There are undoubtedly superficial resemblances, but assuredly he did well to part the two.

18. *Odostomia* (*Turbonilla*) *scalpidens*, n. sp. (Pl. XXXII. fig. 1).

April 17, 1874. Port Jackson, Sydney, New South Wales. 2 to 10 fathoms.

Shell.—Long, narrow, delicate, thin, glossy, with many ribs, small whorls, a constricted suture, and a small half-turned-over depressedly turbinate sinistral tip. *Sculpture:* Longitudinals—there are on the latter whorls about 20 to 25 (on the earlier they are fewer) fine straight rounded but little raised riblets, parted by furrows of much the same size and form; they run from suture to suture, but are cut off on the base by a levelling up of the surface. Spirals—none. *Colour* hyaline white. *Spire* very high, narrow and conical. *Apex:* the top is small, and consists of two depressedly turbinate and half-reverted whorls, of which the first is minute. *Whorls* 11, exclusive of those of the apex; they are convexly flat on the sides and short. *Suture* constricted, somewhat oblique. *Mouth* small, oval, shortly pointed above. *Outer lip* thin, flatly convex, on the base patulous. *Inner lip* thin and flat across the body; obtuse-angled at the top of the pillar, which has a thin faintly twisted edge, with nothing like a channel or umbilicus behind it. H. 0·24 in. B. 0.05. Mouth, height 0·04, breadth 0·028.

This species resembles *Odostomia* (*Turbonilla*) *nitida*, Angas (*nec* Adams)=*hofmani*, Angas, in sculpture, but, with slightly higher whorls, is very much more slender, being only one-third of the breadth for the same length.

19. *Odostomia* (*Turbonilla*) *philomelæ*, n. sp. (Pl. XXXII. fig. 2).

Station 135c. October 17, 1873. Lat. 37° 25′ 30″ S., long. 12° 28′ 30″ W. Off Nightingale Island, Tristan da Cunha. 100 to 150 fathoms.

Shell.—Thin, high and narrow, conical, with a dull surface, a largish turned-over sinistral tip, convex whorls, an impressed suture, a rounded somewhat produced base, and a longish narrowly oval mouth. *Sculpture:* Longitudinals—besides fine and faint lines of growth, there are about 25 narrow rounded ribs, which are sinistrally oblique, and not flexuous; they are parted by rounded furrows of about half their breadth;[1] they stop abruptly at the edge of the base. Spirals—none whatever. *Colour* dull transparent white. *Spire* high, narrow, and conical. *Apex* narrows gradually, the extreme tip is small; it consists of $1\frac{1}{2}$ whorls, which are sinistral, discoidal, and turned more than one-fourth over; this tip rising somewhat prominently forms a small rounded top. *Whorls* $5\frac{1}{2}$, exclusive of the embryonic tip, of slow and regular increase, a little flatly convex; the last has a perfectly rounded slightly produced base. *Suture* strong, openly impressed, oblique. *Mouth* a long narrow oval, slightly pointed (but without any narrowing) above, and at the point of the pillar. *Outer lip* thin, slightly patulous in front, and pointed in front of the pillar. *Inner lip* unrecognisable on the body, thin and slightly concave on the pillar, with no umbilical furrow whatever. H. 0·117 in. B. 0·039. Mouth, height 0·033, breadth 0·024.

This species has a slight general resemblance to *Odostomia indistincta*, Mont., with a much deeper suture, and with whorls more oblique and more rounded. It is still more like a very refined *Odostomia clathrata*, Jeffr., but is finer, smaller, with more delicate and straighter ribs and no spirals; the suture is slighter, being shallower and opener, and there is no umbilicus. In sculpture it is not unlike *Odostomia levis*, C. B. Ad., from Jamaica, but the form is quite different.

20. *Odostomia* (*Turbonilla*) *homœotata*,[2] n. sp. (Pl. XXXII. fig. 3).

September 8, 1874. Flinders Passage, Cape York. 7 fathoms.

Shell.—Strongish, high, and narrow, conical, with a dull surface, a small abrupt top, a turned-over sinistral tip, barely convex whorls, a hardly impressed suture, a short rounded base, and a small oval mouth. *Sculpture:* Longitudinals—there are about 20 rather strong and high round straight but oblique ribs on each whorl; they cease not quite suddenly on the edge of the base; they are parted by deepish rounded furrows of about the same breadth as themselves; they begin on the first regular whorl; in the suture they are feeble. Spirals—there is some faint appearance of one or two very obsolete flat threads just round the edge of the base. *Colour* something between dull horny and

[1] The figure entirely misrepresents this feature.

[2] ὁμοιότατος, very like; resembling such forms as *Odostomia indistincta* and *Odostomia interstincta*.

hyaline. *Spire* high, narrow, and conical. *Apex:* the spire terminates abruptly, and on one side there rises the two-whorled embryonic tip, which is shaped like that of a *Clausilia*, being bluntly and obliquely drawn out, but it is turned over quite on one side, and half sunken in the first regular whorl. *Whorls* 7; they are nearly flat, but look slightly convex from the longitudinal ribs becoming slightly feeble near the suture. *Suture* linear, barely impressed, oblique. *Mouth* small, oval, pointed above. *Outer lip* thin, direct, rounded and patulous in front. *Inner lip* thin, bluntly angulated at the top of the pillar, where it is direct, thin, and expanded, with a small furrow behind it. H. 0·095 in. B. 0·03. Mouth, height 0·022, breadth 0·018.

This species differs from *Odostomia philomelæ*, Wats., in form, in size, and in growth, being far smaller to a larger number of whorls. From *Odostomia indistincta* and *Odostomia interstincta* it differs in style of ribbing, but above all in the apex, which in both of these is simply (though differently) introverted.

21. *Odostomia* (*Turbonilla*) *rhabdota*,[1] n. sp. (Pl. XXXII. fig. 4).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Strongish, high and narrow, conical, brilliant, fluted, with a small semi-globose half-reversed sinistral tip, flat-sided whorls, a slightly impressed suture, a flatly rounded and hardly produced base, and a small narrowly oval (?) mouth. *Sculpture:* besides extremely fine and faint lines of growth, there are on each whorl about 14 ribs, which run from whorl to whorl continuously and nearly direct[2] down the whole spire; they are broad, but on their crest a little pinched up, and are parted by shallow rounded furrows of double their width; they stop abruptly at the edge of the base. Spirals—none. *Colour* translucent white. *Spire* high, narrow, and conical. *Apex* narrows gradually to a very fine top, on which the embryonic tip lies on its side; that tip, consisting of 2½ whorls, is semiglobose, and the extreme point, which is not very small, projects slightly beyond the contour line of the spire. *Whorls* (exclusive of those of the embryo) 9, of very slow and regular increase, flat to barely convex on the sides; the last is slightly elongate, with flatly rounded scarcely produced base. *Suture* distinct, and a little impressed. *Mouth* small, seemingly narrowly oval (but somewhat broken), narrowed and pointed above, and slightly pointed at the front of the pillar. *Outer lip* thin, direct, straight, patulous on the base. *Inner lip* obtusely angled at the top of the pillar, down which it runs direct and there it is rounded over and appressed. H. 0·18 in. B. 0·04. Mouth, height 0·037, breadth 0·024.

This is a much smaller and more delicate form than *Odostomia rufa*, Phil., with a less square base and different sculpture. It may, perhaps, approach to *Odostomia nivea*, Stimpson, which is an

[1] ῥαβδωτός, fluted.

[2] Hence the name.

elongated, shining, ribbed, and spirally smooth shell, but I do not know the species, and the descriptions I have seen are too vague, and the figure in Binney's "Gould" too independent of the text to make anything but a bad guess possible.

22. *Odostomia* (*Turbonilla*) *rhabdoïdes*,[1] n. sp. (Pl. XXXII. fig. 5).

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, North-east Australia. 28 fathoms. Green mud.

Shell.—Strongish, almost acicular, conical, ribbed and spiralled, with a small top, flat-sided subcylindrical whorls, a slightly impressed suture, a short rounded base, and a small rhomboidal mouth. *Sculpture:* there are on each whorl about 18 small flatly rounded ribs, parted by shallow furrows of about the same breadth; the ribs at the top of the whorls are slightly bent, but for much the greater part of their course are straight; they die away rapidly, but not suddenly, on the base. Spirals—the intervals of the ribs are closely scored throughout with small flat threads and shallow furrows; these are faint but traceable on the base. *Colour* white. *Spire* almost acicular, being barely conical. *Apex* broken, but evidently small, and apparently, judging by the scar, discoidal or nearly so. *Whorls* 11, at first rather long, but latterly not markedly so, flat, and barely conical: the last is a little abruptly rounded on the base. *Suture* very slightly openly and shallowly impressed. *Mouth* small, rhomboidal. *Outer lip* somewhat broken, slightly convex, patulous on the base. *Inner lip* very thin, but defined on the body, obtusely angulated at the pillar top, which is encompassed by a very slight depression; the pillar is very oblique, and has a long and marked twist on it. H. 0·19 in. B. 0·038. Mouth, height 0·03, breadth 0·02.

In form this slightly resembles *Odostomia rhabdota*, Wats., but is still longer and narrower, with flatter whorls, and the sculpture is quite different. *Odostomia kymatoëssa*, Wats., is much broader.

23. *Odostomia* (*Turbonilla*) *kymatoëssa*,[2] n. sp. (Pl. XXXII. fig. 6).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Thin, narrow, conical, glossy, transparent, with a coarsish half-reverted discoidal sinistral tip, flatly convex whorls, a shallowly impressed open suture, a rounded, conical, scarcely produced base, and a small narrowly oval mouth. *Sculpture:* Longitudinals—there are on each whorl about 14 straight, direct, narrow, pinched-up ribs, parted by broad open rounded furrows of two to three times their width; they do not run on continuously from whorl to whorl, nor do they extend to the base. Spirals—the whole

[1] ῥαβδοειδής, rod-like. [2] κυματόεις, wavy.

surface is very faintly, microscopically, and unequally scratched with lines which can only be seen in particular lights. *Colour* that of dull glass. *Spire* narrow and conical. *Apex:* the first whorls are a little coarse, the earliest regular one is markedly oblique, and is crowned by the embryonic discoidal tip, which is less than half turned over, and consists of two largish whorls. *Whorls* (exclusive of those of the embryo) 6, slightly convex, rather drawn out, of regular increase: the last is roundedly elongate, with a slightly produced base. *Suture* oblique, distinct, and open, but very little impressed. *Mouth* small, narrowly oval, and pointed above and below. *Outer lip* thin, curved. *Inner lip* rounded and appressed on the pillar, round the base of which, deep within the mouth, there is a blunt, twisted, but very feeble thickening. H. 0·12 in. B. 0·038. Mouth, height 0·033, breadth 0·022.

This species differs from *Odostomia rhabdota*, Wats. (which it much resembles), in sculpture, the ribs not being continuous; in form of whorls, which are more convex and more oblique; and in the embryonic apex, which, though more drawn out and less tilted over, is like that of *Odostomia rufa*, Phil., in its discoidal form.

24. *Odostomia* (*Turbonilla*) *phrikalea*,[1] n. sp. (Pl. XXXII. fig. 7).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Thin, narrow, subcylindrical, with an attenuated top, a half-reverted discoidal sinistral tip, flat-sided whorls, a linear suture, a short rounded base, and a small oval mouth. *Sculpture:* Longitudinals—there are on the later whorls about 25 (on the earlier fewer), narrow, sharply prominent, flexuous, direct riblets, parted by squarish furrows, rather broader than the ribs: they extend to the whole base. Spirals—at the top of each whorl, close to the suture, is a sharpish prominent thread, below which the whorls are slightly and shallowly constricted; the whole base is marked in the interstices of the riblets with narrow, almost contiguous, flat threads, of which there are traces on the rest of the surface between the riblets. *Spire* subcylindrical below, above conical, and narrowing to a small point. *Apex* small, rounded; it consists of 1½ embryonic whorls, which are discoidal, half turned over, and set on one side of the top. *Whorls* (exclusive of the embryonic ones) 7, flat-sided, longish, especially the last, which has a short rounded base. *Suture* linear, and not impressed but distinct, being marginated below by a spiral thread. *Mouth* very small, oval. *Outer lip* thin, direct. *Inner lip* thinly continuous and defined across the body, obtuse-angled at the top of the pillar, direct, patulous, and sharp-edged on the pillar, where there is behind the lip-edge a small shallow furrow and minute umbilical depression. H. 0·13 in. B. 0·039. Mouth, height 0·037, breadth 0·022.

[1] φρικαλέος, with a rippled surface.

This species faintly resembles some of the large forms of *Odostomia interstincta*, Mont., but is larger, more cylindrical, with a higher, rounder, not flattened tip, an unimpressed suture, and a different sculpture. The solitary specimen is somewhat rubbed, and has a broken lip, facts which prevent minuter description of certain features than that given above.

25. *Odostomia* (*Turbonilla*) *dipsycha*,[1] n. sp. (Pl. XXXII. fig. 8).

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, North-east Australia. 28 fathoms. Green mud.

Shell.—Strongish, subcylindrical, very blunt, ribbed, and spirally striate, with a very notable, half-turned-over, elongate, projecting, *Clausilia*-like sinistral apex, slightly impressed suture, short rounded base, and small, oval, but angulated mouth. *Sculpture:* Longitudinals—there are on each whorl about 16 rather high, narrow, slightly flexuous distant ribs, of which one here and there tends to become varicose; they are parted by square furrows of more than double their breadth; they cease abruptly at the edge of the base where the surface is levelled up, and only bears faint traces of the ribs. Spirals—the furrows between the ribs are scored with about 7 flat rounded unequal threads, of which the fifth and sixth (reckoning from above) lying in the middle of the whorl tend to become stronger than the rest; on the base these, like the ribs, are only faintly visible. *Colour* ivory white. *Spire* subcylindrical, tapering but slightly, and ending at the top very abruptly. *Apex* consists of $3\frac{1}{2}$ whorls of rapid increase, forming a little *Clausilia*-like shell, lying quite on its side, not at all immersed, and projecting prominently beyond the line of the spire. *Whorls* (exclusive of those of the embryo) 7, short, slightly tumid below, flatly conical above, and very shortly and faintly contracted at the suture: the last is short and small, with a flatly rounded base. *Suture* a little impressed and submarginated on the upper side by the edge of the basal thread. *Mouth* small, oval but pointed above, and angulated at the top and point of the pillar. *Outer lip* slightly curved, subangulated at the lower outer corner, rounded on the base. *Inner lip* very slight on the body, angulately concave at the base of the slightly oblique and subtwisted pillar, which a fuller depression encompasses. H. 0·11 in. B. 0·03. Mouth, height 0·02, breadth 0·017.

Var. *incerta*, Watson.

September 8, 1874. Flinders Passage, Cape York. 7 fathoms.

A smaller, narrower, more conical, and pointed form, with convex whorls, a more distinctly marginated suture, more direct but oblique ribs, and almost obsolete spiral threads.

[1] δίψυχος, double-minded, with reference to the great contrast between the apex and the rest of the shell.

This looks very like a distinct species, and my own impression is that it is such, but the specimens are not in very good condition, and it is probably better to reckon it as a variety till a larger series of specimens makes fuller study of the species possible.

26. *Odostomia* (*Turbonilla* ?) *amœbæa*,[1] n. sp. (Pl. XXXIII. fig. 1).

September 7, 1874. Torres Strait, Cape York, North-east Australia. 3 to 11 fathoms.

Shell.—Small, strongish, acicular, conical, bicarinate, blunt, with a largish half-turned-over turbinate sinistral tip, sharply impressed suture, short rounded base, and small oval mouth. *Sculpture:* Longitudinals—only on the first two regular whorls can some very faint small and narrow straight distant threadlets be seen; further down the spire there are only microscopic hair-like lines of growth. Spirals—round the top of each whorl, forming the lower margin of the suture, is a high strong rounded thread; below this the whorls are strongly but openly constricted, the lower two-thirds of each whorl is occupied by a broad high rounded swelling; the regular alternation of these two corresponding but strongly contrasted swellings on each whorl gives a very beautiful and striking appearance to the shell;[2] below the second swelling the whorls are constricted into the suture, the upper and lower constriction being very similar, but reversed. There are excessively fine regular microscopic spiral scratches on the whole surface. *Colour* polished ivory white. *Spire* acicularly conical, ending bluntly. *Apex* largish, consisting of $2\frac{1}{2}$ embryonic whorls half turned over and a quarter immersed. *Whorls* (exclusive of the embryonic ones) 8, irregularly cylindrical in outline, rather short, with a short round bluntly keeled base. *Suture* defined by the furrow in which it lies, but in itself scarcely visible. *Mouth* very small, angularly oval, with a small contracted sinus at its upper corner. *Outer lip* direct, but flexuous, slightly sinuated close to the body; below this sinus the lip-edge projects in a small blunt tooth; on the base it is flatly rounded and patulous. *Inner lip* entirely interrupted across the body, obtuse-angled at the top of the pillar, straight but slightly oblique to the left, with a thin patulous edge on the pillar, and joining the base angularly. H. 0·108 in. B. 0·027. Mouth, height 0·022, breadth 0·014.

I have very little doubt this should belong to a separate genus, but till more is known of the group it is better to leave it with *Odostomia*.

27. *Odostomia* (*Syrnola*) *aciculina*, Souverbie.

Odostomia aciculina, Souverbie, Journ. de conch., 1865, vol. xiii. p. 150, No. 1, pl. v. fig. 2.

September 8, 1874. Flinders Passage, Cape York, North-east Australia. 7 fathoms.

Habitat.—New Caledonia, Island Art (Souverbie).

[1] ἀμοιβαῖος, alternating. [2] Whence the name.

3. *Eulimella*, Forbes, 1846.

Species.

1. *Eulimella rudis*, n. sp.
2. *Eulimella acerrima*, n. sp.
3. *Eulimella angusta*, n. sp.
4. *Eulimella laxa*, n. sp.
5. *Eulimella coacta*, n. sp.
6. *Eulimella subtilis*, n. sp.

1. *Eulimella rudis*, n. sp. (Pl. XXXIII. fig. 2).

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Strongish, high and narrow, conical, with a coarse stumpy top, a three-quarter reverted discoidal sinistral tip, flat-sided whorls, a linear suture, a slightly rounded base, and a small subrhomboidal mouth. *Sculpture:* Longitudinals—there are superficial lines of growth, some coarsish, but the most fine. Spirals—these are extremely minute and fine microscopic striæ, which are much more distinct than those in *Eulimella scilla*, Scacc. *Colour* white, glossy. *Spire* conical, ending in a very coarse abrupt top. *Apex:* from one side of the top rises a rounded discoidal three-quarter reverted and semi-immersed tip consisting of 2 embryonic whorls. *Whorls* 7, subconical, faintly irregular in outline, a little longish for the genus. *Suture* linear, barely constricted. *Mouth* small, rhombic to subrhomboidal. *Outer lip* thin, direct, patulous on the base. *Inner lip* not thin, spread out on the body, obtuse-angled at the base of the pillar, on which it is patulous, a little oblique, and has a twisted swelling: behind it is an extremely minute furrow. H. 0·172 in. B. 0·044. Mouth, height 0·035, breadth 0·028.

This is an ungainly shell with very little of the beauty of the genus. There is an unnamed species in the British Museum from St Helena, which a good deal resembles this, but is different.

2. *Eulimella acerrima*, n. sp. (Pl. XXXIII. fig. 3).

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Raine Island, Cape York, North-east Australia. 155 fathoms. Coral sand.

Shell.—Thin, high and narrow, conical, with a slight reverse imbrication of the whorls, a small rounded three-quarter reverted discoidal sinistral tip, flat-sided conical whorls, a linear suture, a flat and shortly produced base, and a small subrhomboidal mouth. *Sculpture:* none but faint lines of growth, and the spirals characteristic of the genus, which here are excessively minute. *Colour* pure glossy hyaline. *Spire* perfectly sharply conical, narrowing regularly to a very fine top. *Apex:* in perfect continuation of the spire rises a small discoidal circular tip three-quarter reverted, not at all immersed, consisting of 2

whorls. *Whorls* (besides those of the embryo) 7; they are short and below project slightly beyond the suture, round the bottom they are just appreciably convex, and are flatly conical above. *Suture* linear, a very little contracted. *Mouth* small, subrhomboidal. *Outer lip* much broken, seemingly thin and direct. *Inner lip* thin on the body, angulated at the top of the pillar, which is straight with a patulous edge; there is a slight swelling and twist round its top. H. 0·11 in. B. 0·023. Mouth, height 0·028, breadth 0·017.

This is a singularly beautiful little species, possibly not quite full-grown, but of that it is difficult to judge from the broken state of the mouth. It is more *Eulima*-like than the pretty little *Eulimella nitidissima*, Mont., of Great Britain, or the *Eulimella pointeli*, de Folin, of the Mediterranean.

3. *Eulimella angusta*, n. sp. (Pl. XXXIII. fig. 7).

September 8, 1874. Flinders Passage, Torres Strait. 7 fathoms.

Shell.—Tall and narrow, translucent, with a very elongated spire, but not small apex, a very slightly impressed suture, perceptibly convex whorls, a short conical base, and a small mouth. *Sculpture:* there are very feeble lines of growth, and at the periphery a very feeble angulation. *Colour* white, not quite transparent. *Spire* very much drawn out and narrow, but not coming at all to a fine point, as it has slightly concave profiles. *Apex* broken, but evidently not small. *Whorls* 9 (remaining, but these are apparently all which existed below the apex); they are at first narrow and high, but lower down the spire they increase markedly in breadth, so that the last, though short, is not small; it is faintly keeled at the periphery, and has a short conical base, the profile lines of which are barely convex. *Mouth* small, oval, pointed above. *Outer lip* thin, in its direction straight from its insertion to the periphery, from which point it curves very quickly along to the point of the pillar, forming a slight narrow gutter in front. *Inner lip:* there is a very thin glaze across the body, the line of which curves over very gently into the slightly concave pillar, whose edge is very fine and is distinctly twisted. H. 0·139 in. B. 0·038. Mouth, height 0·037, breadth 0·023.

This species slightly resembles *Eulimella acerrima*, Wats., but has a much longer, more attenuated, and yet, at the top, broader spire, the lower part of the spire above the last whorl being much narrower, while the upper part is more cylindrical.

4. *Eulimella laxa*, n. sp. (Pl. XXXIII. fig. 6).

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Raine Island, Cape York, North-east Australia. 155 fathoms. Coral sand.

Shell.—Thin, high, small, subcylindrical, loosely twisted,[1] with a largish half-turned-over discoidal sinistral tip, convex whorls, impressed suture, elongate rounded base, and a

[1] Hence the name.

pear-shaped mouth. *Sculpture:* Longitudinals—there are extremely faint lines of growth, with here and there one slightly stronger than the rest. Spirals—the whole surface is sharply, irregularly, microscopically scratched. *Colour* hyaline white. *Spire* subcylindrical and very little conical, the increase of the whorls being slight, and being greater proportionally in length than in breadth. *Apex:* the spire passes on into the slightly elongated embryonic tip, which is largish, consisting of 3 very fine discoidal whorls which are turned right up on their side. *Whorls* (besides those of the embryo) $3\frac{1}{2}$; they are long, convex, and very loosely coiled. *Suture* linear, contracted, oblique. *Mouth* long, pear-shaped, narrowing gradually upwards, but at the top suddenly contracted. *Outer lip* at the top bent in towards the axis, then very slightly curved, rounded and very patulous across the base. *Inner lip* thick, defined, quite straight, and very long across the body; the pillar is extremely short; the lip-edge here is rounded, slightly prominent, and at its junction with the base obtusely angulated, with a very minute furrow behind it. H. 0·085 in. B. 0·023. Mouth, height 0·023, breadth 0·017.

This is a very small species, but, from its proportions and the completeness of the mouth, seemingly full-grown. Its form recalls that of some of the Clionellas.

5. *Eulimella coacta*, n. sp. (Pl. XXXIII. fig. 4).

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York, North-east Australia. 8 fathoms. Coral mud.

Shell.—Strongish, acicular, conical, compact,[1] with a smallish half-turned-over turbinate sinistral tip, slightly convex short whorls, barely impressed submarginated suture, short round base, and very small roundish mouth. *Sculpture:* none but faint lines of growth and microscopic sharp spiral scratches. *Colour* glossy ivory white. *Spire* very long, conical. *Apex:* the spire passes on into the round embryonic tip, consisting of $2\frac{1}{2}$ compact, turbinated, not small whorls, which are turned right over on their side. *Whorls* (besides those of the embryo) 8 to 9; they are short and narrow, compact, of very slow increase, slightly convex below and flat-sided above round the top, which forms a slight subsutural border. *Suture* very slightly contracted, submarginated below, rather oblique. *Mouth* small, roundly oval, pointed above, oblique. *Outer lip* direct and bent in above, round and patulous on the base. *Inner lip* straight and defined across the body; the pillar is very short, and the lip-edge here is sharp, prominent, and at its junction with the base concave, with a very minute furrow behind it. H. 0·148 in. B. 0·03. Mouth, height 0·024, breadth 0·018.

This is a singularly long and narrow form.

[1] Hence the name.

6. *Eulimella subtilis*,[1] n. sp. (Pl. XXXIII. fig. 5).

September 7, 1874. Torres Strait. 3 to 11 fathoms.

Shell.—Small, thin, acicular, conical, with a smallish half-turned-over subdiscoidal sinistral tip, flat-sided whorls, linear suture, elongate rounded base, and a very small oval mouth. *Sculpture:* Longitudinals—there are pretty distinct, hair-like, very oblique lines of growth. Spirals—the whole surface is very delicately most superficially and regularly microscopically scratched. *Colour* glossy milky white. *Spire* very long, and very slightly subulate. *Apex* is a very little larger than the top of the spire, and consists of 2¼ almost discoidal whorls, which are turned right over on their side; the first one is small, and projects a little, the following enlarge quickly. *Whorls* (besides those of the embryo) 7 to 8; they are rather long and narrow, hardly conical, flat on the sides, with a very slight tendency to bulge below. *Suture* linear, barely impressed, rather oblique. *Mouth* extremely small, narrowly oval, narrowed above. *Outer lip* very much bent in, and descending above, arched roundly pointed and patulous on the base. *Inner lip* defined and thickish across the body; its line becomes more curved on the short pillar, where the edge is patulous and prominent, with a minute furrow behind it. H. 0·12 in. B. 0·025. Mouth, height 0·02, breadth 0·014.

This species differs from *Eulimella coacta*, Wats., in general form, in the shape of the individual whorls of the apex and of the suture.

4. *Mathilda*, Semper, 1865.

Mathilda (*Cingulina*) *spina* (Crosse and Fischer).

Turritella spina, Crosse and Fischer, Journ. de conch., 1864, vol. xii. p. 347.
„ „ Crosse and Fischer, Journ. de conch., 1865, vol. xiii. p. 44, pl. iii. figs. 13, 14.
Cingulina spina, Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 169, No. 84.
„ „ Port Jackson Moll., Additional List, Proc. Zool. Soc. Lond., 1871, p. 91, No. 24.

April 17 and 18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—South Australia, and Port Jackson, Sydney.

Semper's genus was not proposed when this species was described, so that its classification under *Turritella* was very natural. Mr Angas would call it a *Cingulina*. Adams' definition (Ann. and Mag., 1860, vol. vi. p. 414) of that genus omits all reference to the sinistral apex, which is its most distinctive feature. Whether Semper, in defining *Mathilda* (Journ. de conch., 1865, p. 328), had Adams' *Cingulina* in remembrance may be doubted, but his phrase, "anfractibus in speciebus typicis cingulis transversis et *striis longitudinalibus reticulosis*" is not so exclusively applicable to shells having the reticulated sculpture of *Cerithium* as to exclude shells the interstices of whose spiral bands are "*sculptis*," as Adams says those of *Cingulina* are. In these circumstances it seems better either to suppress *Cingulina* altogether, or to retain it merely as a subgenus of *Mathilda*.

[1] Fine, with the idea of exact, as if its lines had been artificially smoothed down.

5. *Dunkeria*, Carpenter, 1857.

Dunkeria falcifera, Watson (Pl. XXXIV. fig. 5).

Dunkeria falcifera, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 251.

Station 56. May 29, 1873. Lat. 32° 8′ 45″ N., long. 64° 59′ 35″ W. Bermudas. Bottom temperature 38°·2. 1000 to 1075 fathoms. Coral mud.

Shell.—Small, high, conical, tapering a little abruptly to a fine point, longitudinally and spirally ribbed, with rounded whorls and base. *Sculpture:* Longitudinals—in the last two whorls there are 14 to 15 rather narrow and sharpish ribs; they slowly increase in number as one follows them up the spire; on the two subembryonic whorls they suddenly increase to about 30. At the top of each whorl they are small, sharp, and strongly convex; lower down on the whorl they are straight; they are parted by flattish furrows two to three times their breadth; on the last whorl they are oblique and somewhat irregular in form and arrangement, on the base they disappear. Besides these the whole surface of ribs and furrows is scored with microscopic rounded and very distinct threads. Spirals—on each whorl there are five small rounded spiral threads; the highest and strongest lies at about two-fifths of the whorl's breadth below the suture, and forms an angular shoulder on the whorl, whose chief projection is at this point; the rest are pretty equally distributed on the whorl; the fourth is weaker than the two above it, and the fifth, which is still smaller, lies exactly at the suture. All of these, but especially the first, rise into little sharpish knots as they cross the ribs; on the subembryonic whorls they disappear. *Colour* glossy, translucent white. *Spire* high and conical, but the upper fourth of the shell tapers a little abruptly to a very fine point; its outlines are broken by the strong sutural constriction. *Apex:* the extreme tip is broken. *Whorls:* there are 8 below the missing embryonic one, of rapid growth in height and breadth; they have a sloping shoulder below the suture down to their point of chief breadth at the carination; from this to the third spiral, where is also a slight carination, they have a straightish outline; below this they contract on an equable curve into the suture; the base is roundly conical. *Suture:* its place is strongly defined by the constriction at the top and bottom of each whorl and by the lowest spiral, which forms its upper edge, but it is much interrupted and obscured by the curved points of the ribs, which bend round convergingly into it. *Mouth* gibbously oval, being almost semicircular to the right and obliquely straight on the body and pillar. *Outer lip* thin, advancing strongly at its junction with the body, from which point it retreats with a rapid open curve, which produces the sickle-like form of the ribs from which the species is named; across the base it is slightly flattened and patulous, with a faint open canaliculation towards the point of the pillar. *Pillar*, with a minute but distinct twist, is very oblique in both its planes; the

line of it runs very straight across the body and out nearly to the point of the pillar, where it curves round to join the basal lip. *Inner lip:* a thinnish porcellanous glaze crosses the body and spreads a little outside of the mouth and round the base of the pillar, to which it also forms a very narrow, thin, and flatly patulous edge, which is angulated both to the inside and the out. H. 0·26 in. B. 0·09. Penultimate whorl, height 0·044. Mouth, height 0·055, breadth 0·05.

This very beautiful little shell has some features of resemblance to *Fenella elongata*, Wats. The twist on the pillar-lip, though very slight, is unmistakable; and this feature makes the absence of the extreme tip of the apex the more to be regretted, as its character would have determined whether this species ought not more properly to have been classed among the Odostomias. *Dunkeria*, however, has an elasticity which makes it very suitable for a doubtful classification. Dr Philip Carpenter (Mazatlan Catalogue, p. 433), in establishing the subgenus, says that it "combines the characters of *Chemnitzia* and *Aclis*, presenting the mouth of the former with the rounded whorls of the latter. It agrees with all the other sections of the family in having its limits badly defined."

6. *Aclis*, Lovén, 1846.

Species.

1. *Aclis mizon*, Wats.
2. *Aclis hyalina*, Wats.
3. *Aclis sarissa*, Wats.
4. *Aclis minutissima*, n. sp.

1. *Aclis mizon*,[1] Watson (Pl. XXXIV. fig. 1).

Aclis mizon, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 245.

Station VIIp. February 10, 1873. Lat. 28° 35′ N., long. 16° 5′ W. Tenerife. 78 fathoms. Volcanic sand.

Shell.—Broadly subulate, high, conical, umbilicated, thin, glassy, feebly ribbed longitudinally. *Sculpture:* Longitudinals—on the penultimate whorl there are about 40 feeble unequal rounded riblets, which run obliquely from right to left across the whorl; they die out on the last whorl, which, towards the mouth, presents a slightly malleated surface; on the upper whorls these riblets are fewer but more equal and distinct, but gradually die out towards the apex; they are parted by furrows rather broader than themselves; on the base they are very feebly present; the whole surface is further covered with faint irregular hair-like lines of growth. Spirals—there are a few very feeble, flatly-rounded, barely raised threads on the last whorl; these are rather more distinct on the base. The edge of the base is slightly and hesitatingly angulated; the lip of the umbilicus is much more distinctly and sharply so. *Colour* thin transparent white, so as to be almost glassy. *Spire* conical, long and fine. *Apex* small, quite regular, and perfectly rounded, with a minute

[1] μείζων, rather large.

flattening down of the extreme point of the first whorl, merely sufficient to prevent its being prominent. *Whorls* 15 to 16, of very gradual and regular increase, rounded, but the equal curve is slightly flattened for the first two-fifths of the whorl's height; the base is flatly rounded and rather produced. *Suture* linear, regular, impressed. *Mouth* rather small, rhomboidal, having an acute angle above and at the point of the pillar, and an obtuse angle at the corner of the base and at the top of the pillar. *Outer lip* very thin and sharp; it joins the body just at the circumbasal angulation, and springs at once very much forward, so as to form with the body a small, shallow, but acute-angled sinus; with a slight and regular forward curve it thus advances to the angulation of the base, from which it runs straight, flat, and slightly patulous to the point of the pillar, which it joins at a bluntly-acute angle, forming a slight but not at all incised canal. *Pillar* is not at all oblique, but is very slightly concave. *Inner lip* is entirely discontinuous across the body, and first makes its appearance in a small and slight porcellanous pad, which closely encircles the base of the pillar; its sharp-edged, narrow, and slightly patulous face forms the entire pillar. *Umbilicus* lies behind the thin pillar-lip, and is a distinct, little, pervious, funnel-shaped pore, sharply defined by the intrabasal carination. H. 0·62 in. B. 0·2. Penultimate whorl, height 0·083. Mouth, height 0·12, breadth 0·088.

I doubt very much whether this species really belongs to this genus. From Sars' *Hemiaclis* it seems, judging from his diagnosis and excellent drawings, to be distinguished by the thinness of the spire and by the minuteness of the apex, the size of the umbilicus, and the smallness of the mouth; in doubt, therefore, I accept Dr Gwyn Jeffrey's advice, and classify it as an *Aclis*, a convenient, because somewhat vague group. I have said that the shell is broadly subulate. The measurements show very plainly that it is so only relatively to its fellows in the genus.

2. *Aclis hyalina*, Watson (Pl. XXXIV. fig. 2).

Aclis hyalina, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 246.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Broadly subulate, high, conical, umbilicate, ribless or *very* faintly ribbed on the earlier whorls, thin, glassy. *Sculpture:* Longitudinals—there are very many, close-set, faint, irregular angulations of the surface, which, besides, is covered with very fine hair-like striæ; these under a lens look very sharp and regular, but under the microscope are seen to be rounded and irregular, made up of little inconstant curves, with changing swellings and depressions. Spirals—the surface is faintly malleated in a somewhat orderly fashion; but besides the larger system of malleations there is a second system a good deal smaller and more irregular, and the raised edges of these very slight depressions run in very numerous irregular and variable spiral lines, which are so slight as only to be visible in a changing light. On the base the longi-

tudinal striæ are rather stronger, and the spiral system feebler than on the spire. The edge of the base is rounded, but there is a change of direction at that part which produces a very slight angulation. The lip of the small umbilicus is thickened and angulated. *Colour* glossy on the surface; the shell is milkily transparent, glassy, and thin. *Spire* conical, with a very slightly concave profile, long and fine. *Apex* small, rounded, but with a very slight contraction and prominence on one side, in consequence of the extreme tip being not entirely suppressed. *Whorls* 12, of gradual and regular increase, convex; the base is rounded, slightly tumid, and produced. *Suture* linear, regular, rather sharply though minutely impressed. *Mouth* small, oval. *Outer lip* leaves the body a little below the contraction of the base; from this point it advances forwards so as to form with the body a small but acute-angled sinus; it sweeps round, not patulous, with a very regular curve to the point of the pillar, which it joins at a bluntly-acute angle, and forms there a slight but not at all incised canal. *Pillar* is very slightly oblique and a little concave. *Inner lip* is entirely discontinuous across the body, and first appears in a minute thin abrupt edge, which surrounds the base of the pillar; its very thin, narrow, and slightly patulous face forms the entire pillar. *Umbilicus* lies behind the thin pillar-lip, and is a minute deep funnel-shaped pore, sharply defined by its angulated and thickened basal lip. H. 0·42 in. B. 0·15. Penultimate whorl, height 0·062. Mouth, height 0·094, breadth 0·064.

This species is very closely related to *Aclis mizon*, Wats., and in any classification they will certainly go together. From that species this differs not only in the ribs, which are probably a very variable feature, but, besides, the shell is proportionally broader, the spire is less attenuated, the base is rounder and more tumid, the suture is more *linearly* impressed and less open, the whorls are more regularly rounded and of more rapid increase, the apex is larger, and the extreme tip is more projecting.

3. *Aclis sarissa*,[1] Watson (Pl. XXXIV. fig. 3).

Aclis sarissa, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 247.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Subulate, conical, smooth, white, glossy, with rounded whorls and a somewhat impressed suture. *Sculpture:* Longitudinals—there are a few very minute and faint lines of growth. Spirals—there are a few irregular and very slight transverse angulations, which are connected with a very subdued and almost invisible malleated surface, which may be seen in a changing light. *Colour* white, probably transparent in fresh specimens; the surface, which is glassy, is very smooth. *Spire* conical, but not quite regularly so, being slightly convex in the middle and very faintly concave above and below. *Apex*,

[1] *Sarissa*, a pike.

for the genus and relatively to size, blunt, almost slightly tumid, round, but on one side the extreme tip has the faintest conceivable prominence. *Whorls* 9, of regular increase, though the last is a little disproportionally large, well rounded; the last, which is slightly tumid, has a very faint trace of angulation below the suture and at the edge of the base, which is flatly rounded and projecting, with a slightly thickened and angulated carination round the umbilicus. *Suture* linear, impressed, and very slightly oblique. *Mouth* oval, bluntly angulated above, effuse on the base and slightly so on the outer lip. *Outer lip* is slightly pinched in at its union with the body; from this point it runs out to the right with a free curve, but, speedily turning to the left, its course is straight, and here it is prominent, and it becomes increasingly patulous as it curves quickly round to join the pillar. *Pillar* is not at all oblique, but is slightly concave. *Inner lip* crosses the body on a thin but sharply-edged pad; it is thin, sharp, and scarcely patulous on the front of the pillar. *Umbilicus:* there is a small funnel-shaped trough between the pillar-lip and the angulated edge of the base, but this contracts immediately to a mere chink. H. 0·153 in. B. 0·053. Penultimate whorl, height 0·026. Mouth, height 0·039, breadth 0·03.

This species is like *Aclis walleri*, Jeffr., but certainly distinct; the shell is broader, the whorls, which are fewer (9 instead of 11), are rounder, being less flattened, constricted above and less bulgy below, the spire, which is less regularly conical, is not so attenuated, the apex is not nearly so fine and the surface of the shell is smoother, the longitudinals being less visible, while the malleated structure, which also exists in *Aclis walleri*, is here even less visible.

4. *Aclis minutissima*, n. sp. (Pl. XXXIII. fig. 9).

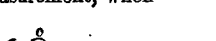
Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Off Raine Island, Cape York, North-east Australia. 155 fathoms. Coral sand.

Shell.—Excessively minute, rather broadly conical for the genus, with slightly convex shortish whorls, an appreciably impressed suture, and a flatly shortly produced base. *Sculpture:* there are some excessively minute and faint lines of growth. *Colour* very palely brownish hyaline. *Spire* conical, high, and, though broadish for the genus, yet in itself narrow in proportion to width. *Apex* blunt and perfectly rounded, the extreme tip being barely visible. *Whorls* 7, rather short, convex on the sides; the last has a slightly produced and conical base. *Suture* slightly impressed. *Mouth* oval; a little pointed above and in front of the pillar. *Outer lip* thin, curved, and little patulous on the base. *Inner lip* slightly convex across the body, obtusely angled at the base of the pillar, on which the lip-edge is thin, and is reverted on a small umbilical furrow; the junction of the point of the pillar and the outer lip is slightly angulated. H. 0·025 in. B. 0·01. Mouth, height 0·008, breadth 0·007.

This is the smallest Gasteropod I have ever seen. Of course in the case of an *Aclis*, whose outer lip has always a more or less unfinished look, it is difficult to say positively whether a solitary specimen, which is all I have had in this case to represent the species, is full-grown or not, but I am sure from the whole aspect of the shell that it is either full-grown or very nearly so. That being the case, I felt that so excessively minute a creature ought to receive formal recognition.

7. *Eulima*, Risso, 1826.

The tip of the apex in *Eulima* is so characteristic, that I felt it was desirable to supply the measurement of this part in each of the new species; but it is obvious that such a measurement, when taken in profile, cannot be satisfactory, because of the uncertainty as to the aspect under which the observer has viewed it. I have therefore given the breadth of the first whorl as seen from a point in the line of the axis, reckoning for the first whorl here, as in all other cases, the part cut off by the line *d b*, in which case the breadth is of course the distance from *a* to *c*.



Eulima, tip of the shell, *a c c*; the first whorl cut off by a straight line, *d b*. Breadth at the first whorl, *a c*.

Species.

1. *Eulima martinii*, A. Ad.
2. *Eulima philippii*, Weinkauff.
3. *Eulima piriformis*, Brugnone.
4. *Eulima psila*, Wats.
5. *Eulima fasciata*, Wats.
6. *Eulima chaskanon*, Wats.
7. *Eulima hians*, Wats.
8. *Eulima ephamilla*, Wats.
9. *Eulima oxytata*, Wats.
10. *Eulima acanthyllis*, Wats.
11. *Eulima acerrima*, Wats.
12. *Eulima sarissa*, Wats.
13. *Eulima latipes*, Wats.
14. *Eulima famelica*, Wats.
15. *Eulima chyta*, Wats.
16. *Eulima campyla*, Wats.
17. *Eulima fallax*, Wats.
18. *Eulima chydæa*, Wats.
19. *Eulima cylindrata*, Wats.
20. *Eulima gomphus*, Wats.
21. *Eulima hyalina*, Wats.
22. *Eulima amblia*, Wats.
23. *Eulima hebes*, Wats.
24. *Eulima dissimilis*, Wats.
25. *Eulima eurychada*, Wats.

1. *Eulima martinii*, A. Adams.

Eulima martinii, A. Adams in Sowerby's Thes. Conch., pt. 15, p. 795, sp. 8, pl. clxix. fig. 5.
„ „ Reeve, Conch. Icon., vol. xv. pl. i. fig. 6.
„ „ Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 283, No. 2.
„ „ E. A. Smith, "Alert" Collections, p. 68, No. 51.

September 8, 1874. Flinders Passage, Cape York, North Australia. 7 fathoms.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, North Australia. 28 fathoms. Green mud.

Habitat.—China Sea (A. Adams); Singapore and Ceylon (British Museum); Torres Strait (Brazier).

I do not know Mr Marrat's *Eulima candida* (except from his figure), but greatly doubt its distinctness from this species. The whole aspect of the shells is very much alike; the size and the slightly rounder and shorter form of the whorls are features so variable in this genus that little can be founded on them; the form of the apex, which is, perhaps, the safest of all marks, he does not compare, and the fact he refers to of the varices not extending to the apex is a feature more or less common to all varixed shells, and in *Eulima* particularly untrustworthy. In *Eulima martinii* the varix becomes evanescent and discontinuous on the upper whorls, and may easily be overlooked even when present.

2. *Eulima philippii*, Weinkauff.

Melania distorta (not of Defrance, nor of Deshayes), Philippi, Enumeratio Moll. Sicil., vol. i. p. 158, pl. ix. fig. 10, vol. ii. p. 135 (*Eulima distorta*, as of Deshayes).
Eulima distorta (not of Defrance, nor of Deshayes), Forbes and Hanley, Brit. Moll., vol. iii. p. 232, pl. xcii. figs. 4, 5, and pl. KK. fig. 4.
,, ,, (not of Defrance, nor of Deshayes), A. Adams in Sowerby's Thes. Conch., pt. 15, p. 793, sp. 2, pl. clxix. fig. 6.
,, ,, (not of Defrance, nor of Deshayes), Gwyn Jeffreys, Brit. Conch., vol. iv. p. 205, and vol. v. pl. lxxvii. fig. 5.
,, *philippii*, Weinkauff, Conch. Mittelmeer., vol. ii. p. 228.
,, *similis* ? (but not of d'Orbigny), Searles Wood, Crag Moll. Suppt. 1, Palæont. Soc., 1872, p. 65, pl. vii. fig. 16.
,, *distorta*, G. O. Sars, Moll. Arct. Norv., p. 210, pl. xi. fig. 23.
,, ,, Monterosato, Enumerazione, p. 35.
,, *philippii*, Seguenza, Form. Terz. Calabria, pp. 264, 354.

February 10, 1873. Tenerife, Canaries. 78 fathoms.

Habitat.—From the Lofoten Islands to the Canaries and the Mediterranean, from 0 to 140 fathoms.

Fossil.—From the post-glacial beds of Norway (Sars).

A good deal of confusion has gathered round the nomenclature of this species. The confusion began with Defrance, who (Melaniens fossiles, Dic. des Sciences Nat., 1823, vol. xxix. p. 468), describing the Upper Eocene species from Grignon, and distinguishing it from *Eulima nitida*, Lam.,[1] another Grignon fossil, says that he has received specimens of *Eulima distorta* from the neighbourhood of Angers, "qui ont 7 à 8 lignes de longueur," and he adds, "on trouve dans la baie de Wey-

[1] Lamarck's mistake of confounding *Eulima distorta*, Defr., with *Eulima nitida*, Lam., lies outside of our subject.

mouth une coquille qui ressemble parfaitement à ces derniers, et qui doit être son analogue vivant. Elle m'a été envoyée sous le nom de *Turbo politus;* on trouve aussi cet espèce fossile à Dax."

Without discussing the Angers fossil, we find here at least two other and quite distinct species mixed up with *Eulima distorta*, Defr., viz., *Eulima polita* (?), Linne, as represented by living specimens from Weymouth, and a Miocene fossil from Dax, near Bordeaux. It is this latter species which is called *Eulima distorta* by Basterot (Coq. foss. Bord., p. 36), and by Grateloup (Coq. foss. Adour, vol. i.), but was afterwards distinguished as *Eulima similis* by d'Orbigny (Cour. de Pal., 1847). Searles Wood (*loc. cit. supra*) with a query identifies this Miocene fossil from Bordeaux with the living species, but Deshayes (Anim. s. vert. Paris, vol. ii. p. 543) says that the fossil is a much larger form, and quite distinct.

Philippi (*loc. cit. supra*) attributes the name "*distorta*," under which he quotes it, to Deshayes (Coq. foss. Paris, vol. ii. p. 111, sp. 10, pl. xiii. figs. 24, 25) instead of to Defrance, and applies it to the living species from the Mediterranean, as indeed Deshayes too originally did (Coq. foss. Par., &c., and also in his edition of Lamarck, Anim. s. vert., vol. viii. p. 454), an opinion which the latter, however, subsequently corrected (Anim. s. vert. Par., &c.)

Dr Gwyn Jeffreys (Brit. Conch., vol. iv. p. 190) says that *Eulimas* are not parasitic. Strictly speaking, that is true, for they do not prey on the living tissues of the animals they inhabit, but they seem largely to live on the excrement of other animals. In Madeira I found them constantly, and sometimes as many as four or five together, among the spines near the vent of *Echinus esculentus*, Gmelin.

3. *Eulima piriformis*, Brugnone (Pl. XXXV. fig. 3).

Eulima piriformis, Brugnone, Miscellanea Malachologica, pt. 1, p. 7, fig. 5.
„ „ Monterosato, Enumerazione, p. 35.
„ *chaunax*, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 114, sp. 3.
„ [*piriformis*, J. Gwyn Jeffreys, Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1884, p. 369, sp. 11, pl. xxviii. fig. 6.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—Sicily (Brugnone and Monterosato).

Fossil.—Pleistocene of Sicily (Brugnone and Monterosato).

Shell.—Small, straight, rather broad, with suture slightly impressed; whorls a very little rounded below, the last rather large and somewhat suddenly contracted; with a short flattish base, a large very open mouth, and a small rounded tip. *Sculpture:* none. *Colour* translucent ivory-white. *Apex* small, rounded; but the two slopes do not perfectly agree. *Spire* shortish, perfectly straight, and with entirely similar profile-lines. *Whorls* 9, flattened above, but just perceptibly swollen below, and faintly contracting to

the inferior suture; the last is a little large and contracts rather suddenly (yet not so as to form an angulation) to the constricted and flattish base. *Suture* very slightly impressed. *Mouth* large, pointedly ovate. *Outer lip* well arched and patulous; on the edge it is deeply sinuated above, prominent in the middle, and retreating in front to the point of the shell, where it forms a broad gutter with a slight projecting lip. *Inner lip:* a thin, narrow, marginated glaze spreads across the body; the pillar-edge is sharp, narrow, not patulous, very slightly oblique to the left, and truncated in front. H. 0·15 in. B. 0·06. Penultimate whorl, height 0·028. Tip of apex, breadth 0·007. Mouth, height 0·05, breadth 0·036.

The proportions of the shell, its size, and the form of the mouth, markedly distinguish this species from *Eulima fasciata*, Wats., which it slightly resembles.

I have to express my obligation to my lamented friend Dr J. Gwyn Jeffreys, for calling my attention to Brugnone's species, with which I was not acquainted. I have no doubt that it is, as stated above, the same as my *Eulima chaunax*. Dr Gwyn Jeffrey's suggested identification, however, of *Eulima hians*, Wats., with *Eulima piriformis*, must be a slip of the pen, so obviously different are the two forms in every respect. I may say here in passing that Dr Gwyn Jeffreys (Proc. Zool. Soc. Lond., 1884, p. 368) quotes me for the finding of *Eulima stalioi*, Brusina, at Madeira, but that is an identification for which I am in no way answerable. I never supposed myself to have found that species there, and an examination of the two shells figured by Dr Gwyn Jeffreys (Proc. Zool. Soc. Lond., 1884, pl. xxviii. fig. 3) enables me to say with absolute certainty that these shells are not the same as any Madeiran species known to me. Whether Professor Brusina now accepts them as his species I do not know, but I am aware that he was doubtful as to his species and that of Dr Gwyn Jeffreys being the same.

4. *Eulima psila*,[1] Watson (Pl. XXXV. fig. 1).

Eulima psila, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 112, sp. 1.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Small, thin, hyaline, straight, very smooth, narrow, and sharp, with longish base and mouth, and small rounded tip. *Sculpture:* none whatever, the surface being perfectly smooth and glossy. *Colour* transparent glassy white. *Spire* high, narrow, and quite straight. *Apex* small, but not really sharp, being perfectly rounded and slightly set to one side. *Whorls* 10, of very regular and slow increase; quite flat. *Suture* oblique, not in the least impressed, so that the division of the whorls is only traceable from the division-walls shining through the shell. *Mouth* long, narrow, and pointedly oval. *Outer lip* rises a very little on the body-whorl, and here at the upper corner of the mouth

[1] ψιλός, bare.

it is slightly hollowed backward on the edge, while it advances in front to the periphery: its direction is very straight in the line of the spire's slope; on the base, which is narrow, it is extremely patulous. *Inner lip:* a very thin and undefined glaze expands on the body, which is very faintly convex, and melts without a break into the pillar, which is very slightly thickened, rounded, and twisted, and behind which lies the slightest possible furrow. H. 0·17 in. B. 0·04. Penultimate whorl, height 0·027. Tip of apex, breadth 0·005. Mouth, height 0·058, breadth 0·024.

This species, in the perfect flatness of its whorls, the absence of any impression of the suture, and form of the apex, greatly resembles *Eulima subulata*, Don.; but it is much more attenuated, the body-whorl in particular is more contracted at the periphery, and the apex is smaller and more perfectly rounded and very slightly bent to one side. In *Eulima bilineata*, Alder, the base of which is more like the Challenger species, the whorls are slightly rounded. In *Eulima philippii*, Wein., var. *gracilis*, there is always some slight irregularity in the spire, and the apex is very much more minute.

5. *Eulima fasciata*, Watson (Pl. XXXV. fig. 2).

Eulima fasciata, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 113, sp. 2.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Very small, slightly bent, short; the suture is discernible on the surface and faintly banded above with white, the base is rounded, the mouth pointedly oval, the tip small and rounded. *Sculpture:* none. *Colour* translucent, with an ivory band encircling the body-whorl at the periphery, and lying above the suture on the spire. *Apex* small, perfectly rounded. *Spire* rather attenuated and bent. *Whorls* 9, flat, the last rather long, with a produced rounded base. *Suture* oblique, slightly impressed, especially near the apex. *Mouth* rather large, oval, pointed above. *Outer lip* a little prominently arched; on its front edge it is rather deeply sinuated above, prominent in the middle, and retreating at the base so as to form a broad, shallow, little canal in front. *Inner lip:* a very narrow rather thin glaze with a defined edge crosses the body, and runs straight down the pillar, which is very narrow and patulous, with a sharp prominent edge and a very minute furrow behind it. H. 0·096 in. B. 0·034. Penultimate whorl, height 0·017. Tip of apex, breadth 0·004. Mouth, height 0·03, breadth 0·017.

Than *Eulima jeffreysiana*, Brus., this is a slightly stumpier form; the whorls are not in the least convex, the apex is blunter and more truncated, the outer lip is much more laterally expanded, and the basal line much more oblique. The form of the mouth and the slightly larger tip distinguish it from the young of *Eulima intermedia*, Cantr.

6. *Eulima chaskanon*,[1] Watson (Pl. XXXV. fig. 4).

Eulima chaskanon, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 114, sp. 4.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—High, narrow, and pliant in its lines, with a scarce visible oblique suture, short flat-sided whorls, a rounded constricted base, a very large and most patulous mouth, and a small rounded but slightly flattened and unequally sided tip. *Sculpture:* there are some microscopic soft lines of growth, which are only visible in exceptionally good light. *Colour* translucent white. *Apex* small, slightly compressed laterally, a little unequally sided, and rounded yet faintly flattened down on the tip. *Spire* high, narrow, and slightly flexuous. *Whorls* 13, not quite flat on the side; they are short and narrow, and of very slow increase; the base is a little elongated and very slightly rounded. *Suture* linear, but just perceptibly impressed; it is very distinct near the top of the spire. *Mouth* large and very open, pointedly ovate. *Outer lip* very slightly arched and patulous; on the edge it is deeply sinuated above, prominent in the middle, and retreats very little to the base, where it is extraordinarily expanded into a spoon-edged shallow canal. *Inner lip:* a very thin glaze with a most faintly defined edge extends across the body; the pillar-edge is narrow, rounded, expanded, with a very minute furrow behind it. H. 0·32 in. B. 0·08. Penultimate whorl, height 0·04. Tip of apex, breadth 0·004. Mouth, height 0·1, breadth 0·05.

This species in many respects resembles in form *Eulima gracilis*, Forb., the large variety of *Eulima philippii*, Wein.; but has a larger apex, a coarser suture, a more contracted, less tumid, and much more one-sided base, and a totally different mouth. Than *Eulima intermedia*, Cantr., it is much more attenuated.

7. *Eulima hians*, Watson (Pl. XXXV. fig. 5).

Eulima hians, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 115, sp. 5.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Largish, somewhat broad, with a coarsish linear suture, short flat-sided whorls, a rounded somewhat constricted base, a large patulous mouth, and a small apex. *Sculpture:* there are feeble microscopic lines of growth; along either side, not quite regularly, nor correspondingly nor uninterruptedly, are scores which mark an old mouth-edge on the succeeding whorls. *Colour* dirty white (but the specimen is a dead shell). *Apex* small, contracting rather suddenly, and in the middle the extreme tip rises into view. *Spire*

[1] χάσκανον, a mask with a gaping mouth.

high, slightly flexuous, and with not quite similar profile-lines. *Whorls* 11, just appreciably convex; the earlier ones are rounded; the last is largish, a little tumid, very faintly angulated at the periphery, with a rounded base, at the point of which the spoon-shaped mouth-front projects. *Suture* linear, slightly impressed, and for the genus a little coarse. *Mouth* large and very open, pointedly oval. *Outer lip* well arched and patulous; the edge is deeply sinuated above, slightly prominent in the middle, and retreats a little to the base, where it is expanded into a very shallow, wide, spoon-edged canal. *Inner lip:* a thinnish narrow glaze with a defined edge crosses the body, and runs out on the straight broad pillar, behind the reverted edge of which lies a strongly marked furrow. H. 0·41 in. B. 0·12. Penultimate whorl, height 0·06. Mouth, height 0·14, breadth 0·06.

In general form this is somewhat intermediate between *Eulima polita*, Linne, and *Eulima intermedia*, Cantr.; but the apex is much coarser, and the mouth both larger and diverse in shape. No measurement of the apical whorl is given above, in consequence of a minute crush which befell the extreme tip in the very act of taking the measurement.

8. *Eulima ephamilla*,[1] Watson (Pl. XXXV. fig. 6).

Eulima ephamilla, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 116, sp. 6.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—High and narrow, very symmetrical, with a very fine linear suture, flat-sided and very little oblique whorls, a tapering scarcely convex base, and a small pear-shaped mouth. *Sculpture* none. *Colour:* the specimen is dead and discoloured. *Apex* slightly broken, but seemingly small. *Spire* high, quite straight, and with both profile-lines most symmetrical. *Whorls* 12 or 13, quite flat on the sides; the last whorl is a little long but narrow, tapering very gradually, scarcely convex, and very regularly rounded in front, where the lip hardly projects. *Suture* linear, fine and hardly impressed, and very little oblique. *Mouth* not oval, but regularly pear-shaped and slightly oblique. *Outer lip* quite straight in its direction; its edge is deeply sinuated above, a little prominent in the middle, and then it retreats very slightly to the shallow open gutter in front. *Inner lip:* a thin glaze with defined edge crosses the body and runs out on the short, narrow, slightly twisted pillar, with a very minute furrow behind it. H. 0·33 in. B. 0·06. Penultimate whorl, height 0·046. Mouth, height 0·07, breadth 0·05.

This species very much resembles *Eulima subulata*, Don., but is slightly slimmer in form, and the base in particular is more symmetrical; the sculpture is less oblique; the mouth is unmistakably different, being smaller, more drawn in towards the axis of the shell, and the inner lip has no curve on the body, and no angulation at the junction of body and pillar, but runs quite straight from the

[1] ἐφάμιλλος, like, resembling *Eulima subulata*, Don.

angle of the mouth to the point of the pillar. Than either *Eulimâ bilineata*, Alder, or *Eulima gracilis*, Forb., the mouth is much smaller, and the shell is much more attenuated and drawn out on the base.

9. *Eulima oxytata*,[1] Watson (Pl. XXXV. fig. 7).

Eulima oxytata, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 117, sp. 7.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Off Malanipa, Basilan Strait, Philippines. 10 to 20 fathoms. Sand.

Shell.—High and narrow, slightly bent, very thin and transparent, with a very fine linear suture fallaciously marginated and little oblique flat-sided whorls, a very round base, a short round mouth, and an excessively sharp point. *Sculpture* none, but occasional microscopic lines of growth. *Colour* horny translucent to transparent white. *Apex* excessively small, attenuated and sharp, acuminately rounded and almost symmetrical. *Spire* very high and narrow, not quite straight, there being more or less of a bend near the tip. *Whorls* 17, very short, perfectly flat-sided; the last is short, very slightly tumid, with a very gentle and regularly curving base. *Suture* very little oblique, linear, scarcely visible on the surface, and having the appearance of being remotely marginated in consequence of the septum of the whorls shining through the thin shell. *Mouth* pear-shaped in the young shell; it is somewhat irregularly semicircular in the adult form. *Outer lip* very regularly arched except toward the lower outer corner, where there is a blunt angulation; the edge is shallowly and broadly sinuated above, prominent in the middle, and then it retreats to the shallow, open, unequal-sided gutter in front. *Inner lip* very flat on the body; there is a very slight angulation at the junction of body and pillar, which last is oblique, very short and very narrow, with a patulous but not reverted edge. H. 0·3 in. B. 0·07. Penultimate whorl, height 0·04. Tip of apex, breadth 0·001 to 0·002. Mouth, height 0·05, breadth 0·04.

This very beautiful form is especially remarkable for the extreme sharpness of its apex, which is not so much as half the breadth of *Eulima philippii*, Wein. It is slightly like *Eulima attenuata*, Sow., but is much slimmer, thinner in texture, more brilliant, and has a shorter and rounder mouth. Than *Eulima acicula*, Gd., it is very much smaller and slimmer. Than *Eulima rutila*, Carp., it is much slimmer, and the apex in particular is very much sharper.

10. *Eulima acanthyllis*,[2] Watson (Pl. XXXV. fig. 8).

Eulima acanthyllis, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 118, sp. 8.

July 1875. Reef off Honolulu, Sandwich Islands. 40 fathoms.

Shell.—Very small, very slightly bent, transparent, with a very fine somewhat oblique suture, flat-sided whorls, a straight oblique shortish base, a pear-shaped flat-ended mouth,

[1] ὀξύτατος, excessively sharp. [2] ἀκανθυλλίς, a small prickle

and an excessively sharp tip. *Sculpture* none. *Colour* pure very glossy transparent white. *Apex* quite extraordinarily small, not perfectly regular, being slightly pinched-in at the very tip, which is rounded but slightly acuminated, and not perfectly symmetrical. *Spire* very high and narrow, nearly but not quite straight, one side being slightly more oblique than the other. *Whorls* 8, almost perfectly flat-sided except towards the tip, where they are slightly rounded. *Suture* rather oblique, scarcely impressed except towards the tip, where it is a little distinct; the septum between the whorls shines through the shell, and of course makes the suture easily recognisable. *Mouth* pear-shaped, but a little truncated in front. *Outer lip* almost straight, arched at the outer basal corner, and a little straight in front; its edge is deeply sinuated above, prominent in the middle, and very retreating in front, where it forms a broad deep gutter. *Inner lip:* a thin narrow glaze with a defined edge crosses the body and extends down the pillar, on which it is expanded and slightly twisted; from the upper corner of the mouth to the point of the pillar the line is nearly straight or very slightly concave. H. 0·1 in. B. 0·02. Penultimate whorl, height 0·01. Tip of apex, breadth 0·002. Mouth, height 0·024, breadth 0·01.

This species, which is much smaller than *Eulima oxytata*, Wats., is very like a young form of that species, but it increases more rapidly, so that it has a whorl more than a specimen of *Eulima oxytata* of the same size; the apex is as small, but is the last thing more abruptly contracted. The *Eulima manzoniana*, Issel, from the Red Sea, is larger for the number of whorls, somewhat broader in proportion to the length, the suture is less oblique, and the base is longer and more rounded.

11. *Eulima acerrima*, Watson (Pl. XXXVI. fig 1).

Eulima acerrima, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 118, sp. 9.

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Raine Island, Cape York, North Australia. 155 fathoms. Coral sand.

Shell.—Small, straight, high and narrow, translucent, with slightly impressed suture, flat-sided whorls, a long slowly attenuated and scarcely rounded base, a very long pear-shaped flat-ended mouth, and an excessively sharp tip. *Sculpture* none. *Colour* glossy, translucent white with a tinge of yellow in the middle of the whorls. *Apex* excessively minute, not quite symmetrical as the tip rises on one side. *Spire* high and narrow, almost but not quite symmetrical in its profile-lines. *Whorls* 12, very nearly quite flat-sided, but towards the tip a little convex. *Suture* rather oblique, scarcely impressed but defined by the septum, which shines through the shell. *Mouth* long, pear-shaped, but a little truncated in front. *Outer lip* scarcely in the slightest degree convex, not patulous except in front, where it forms a shallow gutter; its edge is deeply sinuated above, very prominently rounded in the middle, and slightly retreating in front. *Inner lip* almost quite straight to the point of the pillar, where the meeting with the gutter-edge is very abrupt and almost angulated; the defined-edged glaze spreads a little on the body and runs

out straight on the flat and narrowly expanded pillar. H. 0·16 in. B. 0·04. Penultimate whorl, height 0·02. Tip of apex, breadth 0·003. Mouth, height 0·05, breadth 0·025.

Compared to *Eulima intermedia*, Cantr., this is a much slimmer form, with a longer more attenuated base, more curved profiles, and a much sharper apex. Than *Eulima oxytata*, Wats., it is slimmer, the profile-lines are not quite so straight nor the individual whorls so flat, the suture is more oblique, the mouth does not project laterally, the base is smaller and longer, and the apex is not so minute nor so symmetrical.

12. *Eulima sarissa*, Watson (Pl. XXXVI. fig. 2).

Eulima sarissa, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 119, sp. 10

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Straight, high and narrow, rather dull, with a scarcely perceptible suture, very slightly rounded whorls, a short stumpy base, roundish mouth lying very much in the line of the axis, and with a very small symmetrical tip. *Sculpture:* there are coarsish microscopic lines of growth. *Colour* dullish white, but the shell is dead. *Apex* very small and symmetrically rounded. *Spire* narrow, straight, nearly symmetrical, but with slightly undulating profile-lines; most marked as usual near the apex, the last two whorls of which have a slight but marked contraction. *Whorls* 11, scarce perceptibly rounded. *Suture* extremely slight, and only a little oblique. *Mouth* short, broad, and rounded, pointed above, and with a broad shallow patulous gutter in front. *Outer lip* well and regularly arched; it is patulous in front, but direct above; there its edge retreats very much; it advances in the middle, and retires again toward the base. *Inner lip:* across the scarcely convex body there is a glaze with a well-defined edge; the junction of body and pillar is obtuse-angled; the pillar is short, with a rounded patulous edge. H. 0·16 in. B. 0·05. Penultimate whorl, height 0·02. Tip of apex, breadth 0·003. Mouth, height 0·04, breadth 0·03.

This species has not the sharp impressed suture, perfectly flat-sided whorls, and high polish of *Eulima intermedia*, Cantr.; is straighter and more symmetrical, the shell is thinner, the base is narrower and longer, the mouth is larger, the suture is more oblique, the apex is small but more equally rounded, not rising on one side as in that other. It is a good deal like a large form of *Eulima jeffreysiana*, Brusina, but is slimmer, the whorls are not so rounded, the mouth is very much shorter and rounder, and though the apex is about the same size and form, yet the whole spire is markedly more attenuated. *Eulima acerrima*, Wats., is slimmer, longer in the base, narrower in the mouth, and smaller in the tip. *Eulima oxytata*, Wats., besides other differences, has a far more attenuated spire and minute tip. *Eulima ephamilla*, Wats., is a species with larger whorls and an impressed suture; but its greater size, the absence of young specimens, and its somewhat damaged tip make minute comparison difficult.

13. *Eulima latipes*, Watson (Pl. XXXVI. fig. 3).

Eulima latipes, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 120, sp. 11.

September 8, 1874. Flinders Passage, Torres Strait. 7 fathoms.

Shell.—Squat, with a broad flat base, a rapidly contracting bent spire, a small tip, convex whorls, an impressed suture, and a small pear-shaped mouth. *Sculpture:* none. *Colour* glassy white. *Apex* very small, acuminately symmetrically rounded. *Spire* small and bent above, enlarging very rapidly in breadth, with concave profile-lines. *Whorls* 9, short, broad, of slow increase, slightly convex. *Suture* slight, a little impressed, scarcely oblique. *Mouth* small, pear-shaped. *Outer lip* arched, its edge retreats above, is rounded in the middle, and is patulous throughout. *Inner lip* is continuously arched across the body and down the short broad pillar. H. 0·093 in. B. 0·045. Penultimate whorl, height 0·015. Tip of apex, breadth 0·002. Mouth, height 0·029, breadth 0·019.

This species is remarkable for the breadth of its base and the smallness of its tip. Unfortunately it is not very well represented, the specimen which I regard as full-grown being rubbed and chipped, and the two which are perfect being young and imperfectly developed, especially about the mouth.

14. *Eulima famelica*, Watson (Pl. XXXVI. fig. 4).

Eulima famelica, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 121, sp. 12.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 fathoms. Volcanic mud.

Shell.—Slightly more cylindrical than is usual in the genus, thin, with a small direct oval mouth, a truncated rounded base, unsymmetrical profiles, whorls neither convex nor concave, yet not flat, suddenly constricted near the tip, which is small, but not fine, and is bluntly rounded. *Sculpture:* none. *Colour* white, but with a horny translucency. *Apex* small, but blunt and rounded. *Spire* small, slightly bent, enlarging slowly and regularly; its profile-lines are slightly convex, but are not symmetrical. *Whorls* 11, those toward the apex are slightly convex, after the second is a rather sudden slight enlargement. *Suture* a little impressed and rather distinct, not much oblique. *Mouth* oval, pointed above, rather small. *Outer lip* arched, slightly patulous; its edge retreats above, advances very much below, retreating again in front, where it forms a slight patulous gutter. *Inner lip* has a thickened glaze with defined edge, and is very regularly arched from the upper corner to the point of the shortish, narrow-edged pillar. H. 0·14 in. B. 0·04. Penultimate whorl, height 0·029. Tip of apex, breadth 0·003. Mouth, height 0·04, breadth 0·029.

The name of this species was suggested by the hungered look of the shell. It has a larger tip with a less contracted spire, a more truncated base, and a smaller broader mouth than *Eulima*

gracilis, Forbes and Hanley. It most resembles *Eulima sarissa*, Wats.; but it is, as compared to that species, slimmer, the base is much shorter, the mouth more regularly oval, the apex blunter, the spire more flexuous.

15. *Eulima chyta*, Watson[1] (Pl. XXXVI. fig. 5).

Eulima chyta, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 121, sp. 13.

Station 344. April 3, 1876. Lat. 7° 54′ 20″ S., long. 14° 28′ 20″ W. Ascension Island. 420 fathoms. Volcanic sand.

Shell.—Very small, with compressed rounded outlines, glossy, with a slightly impressed suture, flat whorls, a short rounded base, oblique pear-shaped mouth, and a small blunt rounded tip. *Sculpture:* none. *Colour* glossy porcellanous white. *Apex* small, but very blunt and round. *Spire* conical, unsymmetrical. *Whorls* 9, short, broad, flat; the last, which is small, is bluntly angulated at the periphery, and has a blunt rounded base. *Suture* minutely but sharply impressed. *Mouth* small, oblique, pear-shaped with a gutter in front, and altogether very like the mouth of a *Rissoina*. *Outer lip* thick and strong, but with a sharp edge; it is well arched; the edge retreats above, is very prominently rounded in the middle, and retires in front, where it is patulous. *Inner lip:* a narrow defined glaze crosses the body, which is barely convex; this glaze spreads a little at the concave base of the pillar, which is extremely short and narrow, and has a sharpish edge. H. 0·085 in. B. 0·03. Penultimate whorl, height 0·014. Tip of apex, breadth 0·004. Mouth, height 0·024, breadth 0·017.

This small species is like some of the small *Eulimellas*, but is a true *Eulima*.

16. *Eulima campyla*,[2] Watson (Pl. XXXVI. fig. 6).

Eulima campyla, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 122, sp. 14.

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Raine Island, Cape York, North Australia. 155 fathoms. Coral sand.

Shell.—Subfusiform, thin, with a narrow direct semioval mouth, a long subconcave base, flat whorls, an impressed suture, slightly convex profiles, and a small blunt tip. *Sculpture:* there are a few very slight lines of growth. *Colour* hyaline to porcellanous. *Apex* small, but very bluntly rounded, a little tumid; the extreme tip rises a little on one side. *Spire:* laterally it is straight; but the whole shell bends forward in the plane of the mouth,[3] and the apex has a bend over of its own. *Whorls* 9, those toward the apex are slightly convex, those lower down are less so; the earlier ones are of slow and

[1] χυτός, cast. [2] καμπύλος, curved.

[3] It is from this curved form that the name of the species is derived.

regular increase, but the penultimate is rather long, and the last one is elongated and attenuated. *Suture* fine, slightly impressed, very little oblique; towards the lip it rises a little, a peculiarity connected with the bend of the shell toward the mouth. *Mouth* semi-oval, very long and narrow. *Outer lip* straight, converging toward the pillar, sweeping across the base with a very regular and even curve; the edge retreats above, but from the middle onwards is perfectly flat; in front it is very patulous and spoon-shaped, but not hollowed. *Inner lip* is a little thickened; from the upper corner of the mouth it runs straight to the point of the pillar, on which it is broadly and flatly reflected; it is abruptly angulated where it joins the basal lip. H. 0·15 in. B. 0·04. Penultimate whorl, height 0·03. Tip of apex, breadth 0·004. Mouth, height 0·06, breadth 0·03.

The length of the base, the peculiar bend of the spire, and the narrow mouth cut off on the left by the straight line of the inner lip and narrower than the measurement seems to indicate, give a peculiar aspect to this shell. I know of none which it resembles.

17. *Eulima fallax*, Watson (Pl. XXXVI. fig. 7).

Eulima fallax, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 123, sp. 15.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Shell.—Small, translucent, strong, rather broad, subangulated at the periphery, with a short broad flattish base, a nearly symmetrical spire, a small subtruncated rounded one-sided apex, flat whorls, a nearly invisible suture, an oblique pear-shaped mouth, and a thickened lip. *Sculpture:* there are faint microscopic lines of growth. *Colour* alabaster-white, glossy. *Apex:* the first two whorls are a little tumid and cylindrical, and the top is somewhat abrupt, being slightly tabulated with the small extreme tip but slightly projecting. *Spire* straight, with conical and nearly symmetrical profiles. *Whorls* 9, flatly conical, small, and of slow increase; the last, which is also small, is slightly oblique, and begins to contract almost from the suture; the base is broad and flattish to flatly rounded. *Suture* linear and hardly visible, but toward the apex impressed; it is scarcely at all oblique. *Mouth* pear-shaped and oblique, extremely straight on the inner lip. *Outer lip* patulous, especially in front, thickened externally, but bevelled off from the outside to a fine edge, which retreats very much above, but is roundly prominent at the periphery, below which it does not retreat, or only very slightly so toward the front of the pillar, which is crossed obliquely by a *Rissoina*-like trough. *Inner lip:* there is a narrow, patulous, thickish glaze with a defined edge which runs in a very straight line from the upper corner of the mouth to the point of the very short pillar, where it joins the outer lip at a right angle. H. 0·13 in. B. 0·05. Penultimate whorl, height 0·02. Tip of apex, breadth 0·004. Mouth, height 0·049, breadth 0·04.

This species seemed at first sight one already known; but the impression proved deceptive, and hence the name. The form of the spire is somewhat like *Odostomia unidentata*, Mont., whilst the mouth resembles *Eulima paivensis*, Wats. from Madeira. The form of the earlier whorls is faintly suggestive of the peculiar columellar tip of the spire in *Stilifer*. *Eulima lentiginosa*, A. Adams, from Japan, is of the same size, but has the whorls rounded, the spire smaller and bent, and the apex much sharper.

18. *Eulima chydæa*,[1] Watson (Pl. XXXVI. fig. 8).

Eulima chydæa, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 124, sp. 16.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Smallish, translucent, strong, rather stumpy, with a short broadish rounded base, a symmetrical spire, a small bluntish rounded tip, subconvex whorls, an impressed suture, an oblique pear-shaped mouth, and a thickened lip. *Sculpture:* the whole surface is scored with faint regular microscopic longitudinal streaks. *Colour* translucent white, not very brilliant on the surface. *Apex:* the first two or three whorls are a little depressed, the tip is flatly rounded, and the extreme tip hardly rises into view. *Spire* conical, straight, with nearly symmetrical profiles. *Whorls* 7½, of regular increase, the last alone is a little large; they are slightly convex; the base is contracted, tumid, and slightly concave. *Suture* distinct, being linearly impressed. *Mouth* short and pear-shaped. *Outer lip* thickened by an external varix, but with a fine, though blunt edge, which retreats above and is very patulous in front; in the middle of the solitary specimen it is broken. *Inner lip* thickened, concave, with a short narrowed pillar, crossed in front by a *Rissoina*-like furrow. H. 0·15 in. B. 0·06. Penultimate whorl, height 0·02. Tip of apex, breadth 0·004. Mouth, height 0·06, breadth 0·05.

This species slightly resembles *Eulima paivensis*, Wats., but is narrower, with a finer, more conical spire, flatter-sided whorls, smaller apex and mouth. It has a superficial likeness to *Eulima fallax*, Wats.; but has a coarser apex without the two papillary cylindrical first whorls of that species, its spire-profiles are more convex, there is no contraction of the body-whorl, and the mouth is larger.

The Eulimas of the following group have a coarser apex than those which have gone before:—

19. *Eulima cylindrata*, Watson (Pl. XXXVII. fig. 1).

Eulima cylindrata, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 125, sp. 17.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

[1] χυδαῖος, coarse, such being the general appearance of the shell.

Shell.—Smallish, thin, glossy, attenuated, with a rounded longish base, a symmetrical spire, a blunt biggish tip, flat whorls, a scarcely visible suture, and an ovate mouth. *Sculpture:* There are very faint microscopic lines of growth, with a very feeble continuous indication of an old labial varix on successive whorls. *Colour* translucent white with a slight yellow tinge; the surface is brilliant. *Apex* is largish, blunt, and rounded, being somewhat spread out and flattened down. *Spire:* as the whorls in their growth increase very little in breadth, the breadth at the periphery is slight; and the apex being large, the form of the spire is somewhat cylindrical in comparison with other species of the genus;[1] it is also straight, with nearly symmetrical profiles. *Whorls* 9, of regular increase; they are all small, and not in the least convex; the base is slightly elongated and is rounded. *Suture* scarcely visible, but indicated by the interior septum. *Mouth* ovate, pointed above. *Outer lip* very regularly curved; its edge, which is sharp and thin, retreats above, is rounded and prominent in the middle, where it is slightly patulous; in front it is extremely so. *Inner lip* very direct in its oblique course from above to the point of the short pillar, where it turns over a little abruptly, joining the basal lip: there is a thin glaze on the body, and on the pillar the narrow edge is slightly reverted. H. 0·15 in. B. 0·04. Penultimate whorl, height 0·029. Tip of apex, breadth 0·008. Mouth, height 0·04, breadth 0·027.

The shape of this species is somewhat like that of an *Aclis;* but the texture of the shell and form of mouth are unmistakably those of *Eulima*. It is a little like *Eulima stenostoma*, Jeffr., but is more cylindrical and compressed, with shorter whorls and a much smaller and relatively broader mouth.

20. *Eulima gomphus*,[2] Watson (Pl. XXXVII. fig. 2).

Eulima gomphus, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 125, sp. 18.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Smallish, translucent, thin, glossy, rather attenuated, with a subconical base, a symmetrical spire, a biggish but bluntly-pointed tip, flat whorls, a distinct linearly impressed suture, and an oval mouth. *Sculpture:* There are many close-set, fine, microscopic lines of growth. *Colour* translucent white, with a glossy surface. *Apex* is largish, but the first whorl contracts a little, and the extreme tip, which rises slightly on one side, is very bluntly pointed, or at least not perfectly rounded. *Spire* conical, symmetrical, with a slight sudden contraction toward the top. *Whorls* 9, of very regular increase; they are all small and not in the least convex, except the first three, which are slightly so. *Suture* a little oblique, linearly impressed, except in the case of the first

[1] It is from this the name is derived.

[2] γόμφος, a nail.

three whorls, which slightly contract into the suture both above and below. *Mouth* a long oval, in its direction straight, with an open gutter in front. *Outer lip* a little flatly arched; its edge retreats very much above, forming a deep wide sinus: at the periphery it makes a very prominent advance; beyond this it scarcely retreats, but across the base projects with a very prominent patulous lip. *Inner lip:* there is a thin defined glaze across the flat body; the pillar is long and concave, with a rather broadly reverted lip which passes very gradually over into the patulous basal lip. H. 0·14 in. B. 0·04. Penultimate whorl, height 0·02. Tip of apex, breadth 0·008. Mouth, height 0·048, breadth 0·025.

This species is represented by eight specimens, all nearly of the same size, but they look hardly quite mature. It differs from *Eulima cylindrata*, Wats., in being a little broader in form, more conical, and less cylindrical; the suture is distinct; the mouth and the apex in all their details are different.

21. *Eulima hyalina*, Watson (Pl. XXXVII. fig. 3).

Eulima hyalina, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 126, sp. 19.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Thin, hyaline, glossy, rather narrow, with a bluntish rounded base, a symmetrical spire, a biggish flattened tip, slightly convex whorls, a well-marked suture, and a short oval mouth. *Sculpture:* There are microscopic hair-like but slight lines of growth, with occasional stronger mouth-edge scars at irregular intervals, but with a recurrence of one series of them on successive whorls: these scars are like cracks in the substance of the shell. *Colour* hyaline white, scarcely clouded, and with a glassy surface. *Apex* rather large and blunt, the tip being flattened down and spread out, with a very slight rise on one side of the flatly rounded summit. *Spire* straight and symmetrical. *Whorls* 8½, of regular increase; they are a little large and slightly convex. *Suture* somewhat oblique and distinct in consequence of the slight rounding of the whorls. *Mouth* a roundish oval, pointed above and guttered in front. *Outer lip* roundly arched throughout; its thin edge retreats very much above, is roundly prominent at the periphery, and retreats toward the base, where it is very patulous. *Inner lip* scarcely convex on the body; it is slightly concave on the short patulous-edged pillar. H. 0·19 in. B. 0·06. Penultimate whorl, height 0·03. Tip of apex, breadth 0·01. Mouth, height 0·06, breadth 0·03.

This is a stouter form than *Eulima gomphus*, with shorter mouth, blunter tip, and rounder whorls. Compared to the young of *Eulima stenostoma*, Jeffr., this is a broader form with shorter and less oblique whorls, a much shorter and broader mouth, and a blunter tip.

22. *Eulima amblia*,[1] Watson (Pl. XXXVII. fig. 4).

Eulima amblia, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 127, sp. 20.

Station 145. December 27, 1873. Lat. 46° 43′ S., long. 38° 4′ 30″ E. Half-way between Marion Island and Prince Edward Island. 50 to 150 fathoms. Volcanic sand.

Shell.—Small, thin, translucent or transparent, a little cylindrical, slightly bent, with a blunt tip, nearly flat-sided whorls, a very slight linear suture, and an oblong mouth. *Sculpture:* There are some very obscure microscopic lines of growth and spiral scratches. *Colour* glassy, weathering to translucent. *Spire* narrow, slightly unsymmetrical, being a little bent to the right. *Whorls* 6, short, flattened, and scarcely convex on the side; the last is somewhat long with a very blunt round base. *Suture* very slight indeed. *Mouth* oval, pointed above. *Outer lip* curved a little flatly above, but very roundly below; its edge retreats very much above and below, and is prominent at the periphery. *Inner lip* forms a continuous very slightly concave curve across the body and down the short pillar, at the point of which it is slightly angulated at its junction with the base. H. 0·125 in. B. 0·047. Penultimate whorl, height 0·02. Tip of apex, breadth 0·008. Mouth, height 0·04, breadth 0·026.

This species, which is represented by only one specimen and a fragment, is probably full-grown. Compared to *Eulima philippii*, Wein.k, this is a narrower shell, with a much blunter apex, a longer base, a smaller mouth, and an outer lip less laterally prominent.

23. *Eulima hebes*, Watson (Pl. XXXVII. fig. 6).

Eulima hebes, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 127, sp. 21.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Rather small, broad, blunt, slightly angulated at the periphery, straight, with conical profiles, flat-sided whorls, a slightly impressed suture, and a small angulated mouth. *Sculpture:* There are unequal, close-set, hair-like microscopic lines of growth, and faint broader spirals. *Colour* glossy ivory-white. *Apex* very blunt, rounded, with a slight projection of the extreme tip on one side. *Spire* short, conical, very slightly contracted toward the apex. *Whorls* 6, of regular increase; the last is subangulated at the periphery. *Suture* somewhat oblique, slightly impressed and distinct. *Mouth* somewhat lozenge-shaped, being pointed above and at the end of the pillar, and also at the periphery of the shell and the base of the pillar. *Outer lip* thin, angulated at its edge, retreats above and in front, and is prominent at the periphery. *Inner lip:* a thinnish

[1] ἀμβλύς, blunt.

defined pad stretches across the body, which is flat and expands thinly on the straight shortish pillar. H. 0·15 in. B. 0·07. Penultimate whorl, height 0·03. Tip of apex, breadth 0·013. Mouth, height 0·05, breadth 0·04.

This is a remarkably short and blunt form, more like an *Odostomia*, but without the characteristic apex of that genus.

24. *Eulima dissimilis*,[1] Watson (Pl. XXXVII. fig. 5).

Eulima dissimilis, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 128, sp. 22.

April 17, 1874. Port Jackson, Australia. 2 to 10 fathoms.

Shell.—Small, translucent, thin, narrow, straight, cylindrical, with a short spire, a blunt rounded tip, whorls of which the earlier are short and rounded while the last two are high and flattened, an impressed suture, and a round mouth. *Sculpture:* There are faint unequal microscopic lines of growth. *Colour* translucent, glossy white. *Apex* blunt, roundly and evenly pointed. *Spire* short, cylindrical below, roundedly conical above. *Whorls* $5\frac{1}{2}$; above they are short, rounded, and of slow increase, but the last two are somewhat long, cylindrical, and of rapid enlargement; the base is long, slowly contracted, but at last rapidly rounded. *Suture* distinct, and constricted above; below it is less so. *Mouth* short and round, pointed above, patulous but not guttered in front. *Outer lip* circularly curved; its thin edge is quite level. *Inner lip* is very straight, with a thin definite-edged pad on the body and pillar, the latter of which is short. H. 0·11 in. B. 0·03. Penultimate whorl, height 0·026. Tip of apex, breadth 0·009. Mouth, height 0·03, breadth 0·027.

This is a very aberrant form, with curious resemblances to *Rissoa epidaurica*, Brusina,[2] and *Rissoa striata*, Adams, but is, I think, a true *Eulima*, and is also probably mature. It is slightly like *Eulima campyla*; but is smaller and straighter, with a larger blunter apex and small round mouth.

25. *Eulima eurychades*,[3] Watson (Pl. XXXVII. fig. 7).

Eulima eurychades,[4] Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 129, sp. 23.

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Off Raine Island, Cape York, North Australia. 155 fathoms. Coral sand.

Shell.—Small, strongish, porcellanous, glossy white with a smoky band, somewhat like a *Pupa*-shell but more conical, straight, with a blunt tip, flat-sided whorls, a strongly impressed suture, and a small round mouth. *Sculpture:* There are obscure microscopic

[1] As not like a *Eulima* at all.

[2] The identification of this species with *Rissoa glabrata*, v. Mühlf., seems to me very doubtful.

[3] εὐρυχαδής, wide gaping.

[4] Printed by mistake *eurychada*.

crowded hair-like lines of growth and finer spiral lines. *Colour* glossy porcellanous white, banded in the middle with smoky brown which deepens to the apex. *Apex* blunt and rounded. *Spire* narrow and symmetrical, with conical profiles. *Whorls* 5½, short, of slow increase, flat-sided; but the last is slightly rounded, contracting toward the base, its whole round also diminishes in size toward the mouth. *Suture* linearly impressed; but toward the mouth the superior whorl slightly projects over it in consequence of the contraction of the shell. *Mouth* small, contracted, almost tubular, and perfectly round. *Outer lip* is very thin, and exceedingly patulous and prominent; its edge is very sinuous, retreating above and below, and advancing in the middle. *Inner lip* thick on the body, where it is very patulous, and has an advancing or slightly projecting edge, which is continuous with that of the outer lip: a shallow but well-marked furrow lies behind it, separating it from the body. H. 0·119 in. B. 0·05. Penultimate whorl, height 0·03. Tip of apex, breadth 0·009. Mouth, height 0·03, breadth 0·029.

This is certainly a very aberrant species of *Eulima*, and, but for the foolishness of such subdivisions, might form the basis of a new genus. The mouth is very unlike that of *Eulima*, not being at all pointed behind, and being quite round, contracted, and subtubular; but I think the species may find refuge in this genus. There are some forty or fifty specimens, which indicate that the species is abundant in the locality where it was found.

8. *Mucronalia*, A. Adams, 1860.

Mucronalia xanthias,[1] n. sp. (Pl. XXXVII. fig. 8).

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ W. Tongatabu. 18 fathoms. Coral mud.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Off Wednesday Island, Cape York, North-east Australia. 8 fathoms. Coral mud.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Malanipa, Philippines. 10 to 20 fathoms. Sand.

Shell.—Very small, strong, long, cylindrical, pointed but broadly and bluntly so, white but yellow-tipped,[2] microscopically striated spirally, with a small but long body-whorl, round but pointed mouth, and slightly impressed suture. *Sculpture:* Longitudinals—none. Spirals—the whole surface is scored with strongish microscopic very regular and equal close-set furrows, which are less than $\frac{1}{3000}$ in. apart. *Colour* white, with a yellow top. *Apex* markedly though but slightly smaller than the regular whorls, subcylindrically turbinated, the extreme tip being round and very blunt; it consists of 3 convex whorls, on which the normal sculpture is absent, but which have a few (about 6) harsh spirals, and which are also very obliquely scored across. *Spire* high, cylindrical, a

[1] ξανθίας, yellow head. [2] Hence the name.

little bent. *Whorls* 8 in all; they are cylindrical and convex, and become increasingly long and narrow; the last has a short rounded base. *Suture* openly and slightly impressed. *Mouth* small and round. *Outer lip* sharp but strong, very regularly arched, and projecting to the side. *Inner lip:* it runs without an angle into the outer lip, across the body it is strong and slightly disunited, the pillar scarcely exists, and the projecting lip-edge curves round to the basal lip. H. 0·049 in. B. 0·015. Mouth, height 0·01, breadth 0·01.

I do not know whether this wonderful little species can fairly come into the genus *Mucronalia* of Adams, but I really do not know where else to put it, and it has some features of the group; the tip is abnormal, though certainly not stiliform.

9. *Stilifer*, Broderip, 1832.

Species.

1. *Stilifer brychius*, Wats.
2. *Stilifer crotaphis*, n. sp.

1. *Stilifer brychius*,[1] Watson (Pl. XXXVII. fig. 9).

Stilifer brychius, Watson, Prelim. Report, pt. 17, Journ. Linn. Soc. Lond., vol. xvii. p. 130.

Station 325. March 2, 1876. Lat. 36° 44′ S., long. 46° 16′ W. South Atlantic. 2650 fathoms. Blue mud. Bottom temperature 32°·7 Fahr.

Shell.—In form somewhat like *Littorina rudis*, Maton, of the var. *tenebrosa;* but shorter in base, with a tumid and larger penultimate whorl, very thin, hyaline and glossy, with faint spirals and lines of growth: the generic pillared tip is small. *Sculpture:* Longitudinals—the whole surface is closely scored with slight obsolete and very fine threadlets, which are the lines of growth. Spirals—of these there are many, somewhat broadish but very obsolete; they are unequal, and one forms a feeble angulation considerably above the middle of the whorl. *Colour* pure glassy white, thin, and perfectly transparent. *Apex:* the style is quite straight, well defined, short and small, and consists of two whorls. *Spire* conical and rather high. *Whorls* 6, of rapid but regular increase, obliquely shouldered above from the suture to the very slight angulation, rounded below. *Suture* strong, linearly impressed, submarginated below. *Mouth* roundly pear-shaped, being shortly pointed above, large. *Outer lip* leaves the body-whorl at a right angle; it is slightly patulous, and is well arched throughout. *Inner lip* very oblique, scarcely convex above; it is very concave at the junction of the body and the pillar, which last is flattened and very slightly twisted and runs out to a very sharp edge. H. 0·5 in. B. 0·39. Penultimate whorl, height 0·14. Mouth, height 0·33, breadth 0·3.

The solitary specimen got of this species is preserved in spirit; but I failed to extract the animal. The shell is so delicate that no force can be used. The colour is that pale uniform buff which is so common to deep-sea Mollusca. The mantle lines the shell all round. From the middle of this pro-

[1] βρύχιος, from the depths.

jects a thickish stalked mushroom-like foot, out of the centre of which extends a long thin tongue-like process, somewhat like that figured by Gould in the "U.S. Exploring Expedition," pl. xiv. fig. 247, but shorter and not subulate.

In regard to the shell, it is of course hardly necessary to say that the apical "nucleus" is not "sinistral" (Adams, Genera, vol. i. p. 239).

Stilifer eburneus, Desh. (Conch. de Bourbon, p. 57, pl. vii. fig. 25) is larger than this species, with a shorter spire, fewer whorls, and a more marked style.

2. *Stilifer crotaphis*,[1] n. sp. (Pl. XXXVII. fig. 10).

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 fathoms. Sand and shells.

Shell.—In form like a *Eulima*, high and conical, milky hyaline and glossy, with faint spirals and lines of growth, convex whorls, and a fine subulate slightly bent apex. *Sculpture:* Longitudinals—there are many fine but not sharp scratches in the lines of growth. Spirals—there are feeble obsolete ridges and furrows, and a very faint angulation at the periphery, which occurs just at the edge of the base. *Colour* pure white and hyaline, but slightly milky. *Apex* very small and sharp, but without any definite style. *Spire* high and narrow, conical, with slightly concave profile lines; it is bent at the very tip. *Whorls* 10, small, being both short and narrow, of very regular and slow increase, slightly convex; the base is short and rounded. *Suture* strong, being linearly impressed and slightly marginated below. *Mouth* somewhat quadrangular, being pointed above and in front of the pillar. *Outer lip* sharp and thin, scarcely convex till it reaches the outer corner, where it is slightly angulated and then is curved across the base. *Inner lip:* there is no trace of it across the body; the junction of the body and pillar is very obtuse-angled. The pillar is very straight, with a slightly thickened and rounded edge; the junction of the pillar and outer lip is angulated. H. 0·145 in. B. 0·089. Mouth, height 0·086, breadth 0·055.

The outer lip of the solitary specimen of this species is somewhat broken, especially toward the point of the pillar, which is thus left abnormally projecting as in *Stiliferina*. The shell is much smaller, narrower, more conical and sharper pointed than *Apicalia güntheri*, Angas, from New South Wales; than *Stilifer brazieri*, Angas, from Port Jackson, it is much more compressed and acute.

Family Cerithiopsidæ, Gray, 1857.

Cerithiopsis, Forbes and Hanley, 1849.

Species.

1. *Cerithiopsis pulchella* (C. B. Adams).
2. *Cerithiopsis balteata*, Wats.
3. *Cerithiopsis fayalensis*, Wats.
4. *Cerithiopsis ridicula*, n. sp.
5. *Cerithiopsis turrigera*, n. sp.

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[1] κροταφίς, a pointed hammer.

1. *Cerithiopsis pulchella* (C. B. Adams).

Cerithium pulchellum, C. B. Adams, Shells of Jamaica, 1850, p. 121.
„ „ Sowerby, Thes. Conch., pt. 16, p. 880, sp. 138, pl. clxxxiv. fig. 239.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—Jamaica (Adams).

Adams' use of this name has priority by eight years over Gwyn Jeffreys' application of it to the British species.

2. *Cerithiopsis balteata*, Watson (Pl. XXX. fig. 1).

Cerithiopsis balteata, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond. vol. xv. p. 124, sp. 1.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Shell.—Small, dumpy, oval, reticulate, tubercled, strong, yellow, with an inferior brown band. *Sculpture:* Longitudinals—there are on the last whorl about twenty rows of tubercles, parted by narrow, deepish furrows; they diminish in number on the upper whorls, but run very straight from whorl to whorl down the spire; they are largest and most widely parted on the penultimate whorl, being rather crowded and narrow on the last. Spirals—on each whorl there are two broad spiral threads, which rise into coarse rounded tubercles, of which the upper row is the stronger. The lower row is coloured brown. They are parted by a strong furrow. On the last whorl the upper spiral divides into two rather feeble ones, and the tubercles on the brown spiral diminish in size. On the contracted base is a small furrow, within which is a spiral broken into flat round tubercles. Within this is a squarish-cut furrow, and within this a small spiral forms the base of the pillar, which hardly projects beyond it. The whole surface of the shell is microscopically cross-hatched with longitudinal lines of growth and spiral scratches. These latter are strong on the point of the pillar. *Colour* is yellowish white, with a broadish spiral band of brown, which embraces the whole lower spiral. The whole surface is in this way pretty equally divided between a white and a brown spiral band. The brown colour is probably more crimson when the shell is fresh. *Spire* is short, contracting rather abruptly, with a convexly curved contour. *Apex* broken. *Whorls* 7, excluding those of the embryonic apex, flat, contracted upwards on the spire, on the base contracted downwards and produced. *Suture* invisible, in the bottom of a deep narrow furrow. *Mouth* minute, roundly oval, with a rather large round canal, which turns in at the back of the pillar. *Outer lip* contracted. *Pillar* very short, strong, rounded and pointed. *Inner lip* thick and strong, and on the pillar projecting so as to leave rather a deep fissure behind it. H. 0·087 in. B. 0·045. Penultimate whorl, height 0·019. Mouth, height 0·016, breadth 0·014.

This beautiful little species very much resembles *Cerithiopsis pulchella*, C. B. Adams, from the West Indies; but that is a slenderer shell, being longer in proportion to its breadth, and has a longer pillar; its whole system of sculpture also is more delicate.

3. *Cerithiopsis fayalensis*, Watson (Pl. XXX. fig. 2).

Cerithiopsis fayalensis, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 125, sp. 2.
" " Watson, Cerithiopsides N.E. Atlantic, Journ. Linn. Soc. Lond., vol. xix. p. 92, sp. 5, pl. iv. fig. 5.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Habitat.—Madeira, 0 to 50 fathoms (Watson); coast of Portugal and Spain, to a depth of 220 fathoms ("Porcupine" Expedition, Station 13, 1870).

Shell.—Small, narrow, conical, not contracted on the base, reticulated, tubercled, with a marked sutural furrow, of a light ruddy brown. *Sculpture:* Longitudinals—there are on the last whorl from 15 to 25 small, straight, longitudinal ridges, parted by narrow deepish furrows; they cross the whorls a little obliquely, and run pretty straight down the spire from whorl to whorl, with a slight sinistral twist. Spirals—there are on each whorl three equal rounded threads, which rise into rounded tubercles as they cross the longitudinal ridges; they are parted by rather narrow and deepish furrows. The bottom of each whorl is very slightly constricted into the sutural furrow, which is thus a little more distinct than the other furrows; and from this the succeeding whorl projects with a very straight and perpendicular edge. This furrow encircles the edge of the base, which is sharply defined and contracted by a spiral thread, whose rounded edge projects a little prominently on the inner side of the furrow. On the base the microscopic markings, irregular hair-like lines of growth, and very faint spirals are most visible. *Colour* uniform light ruddy brown. *Spire* high, narrow, pointed, very slightly scalar, with very slightly convex contour lines. *Apex* elongately conical, consisting of four rather short convex whorls, of which the extreme tip is rounded and smooth, and the other three are scored with distinct curved longitudinal riblets. *Whorls* (excluding the embryonic) 11, straight, or very slightly convex on the side; the base is very flat and hardly conical. *Suture* only recognisable from the furrow in which it lies. *Mouth* very small, narrowly oval, with a small but well-marked sinus at its upper outer corner, and with a largish and deepish canal turning in behind the pillar. *Outer lip* not expanded above, and but little so on the base; strongly furrowed by the spirals of the sculpture. *Pillar* short, stoutish, well-rounded, fine-edged, obliquely truncate, and sharp-pointed. *Inner lip:* a thin glaze on the body, but becoming thicker toward the point of the pillar. H. 0·173 in. B. 0·04. Penultimate whorl, height 0·02. Mouth, height 0·029, breadth 0·015.

This species seems to be somewhat variable in size, one of the five specimens which represent it being a good deal larger than the rest, with the same number of whorls. Another specimen is more dumpily conical.

It has some resemblance in a general way to *Cerithiopsis metuxæ* (Chiaje), but in that the contour lines are more regularly conical, the spire is not at all scalar, the whorls are convexly rounded, there is no deep sutural furrow, the tuberculations are long across the shell, and each whorl has four, not three spirals; the form of the base is a good deal like, but the pillar is shorter, stronger, straighter, rounder, and has not the sharp-flanged edge of that species. From *Cerithiopsis tubercularis*, Mont., which it resembles in sculpture, it differs not only in its slender form, but in the absence of the circumcolumnar thread on the base.

The species it most resembles is *Cerithiopsis barleei*, Jeffr., from which it differs in having a slightly shorter apex, scored with stronger, less superficial, fewer, and less oblique longitudinal riblets. The first 1½ regular whorls have only two spiral threads, and the ribs there are stronger than in *Cerithiopsis barleei*. The suture throughout is less strong and open, the circumbasal thread is stronger and more nearly tubercled, and the base within this thread is slightly depressed; the scar of the old canal is barely traceable.

Dr Gwyn Jeffreys (Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1885, p. 60) was mistaken in identifying this species with *Cerithiopsis diadema*, Wats. The points of distinction are sufficiently indicated in my paper on N.E. Atlantic *Cerithiopsides* (*loc. cit.*, pp. 92, 93). He was also mistaken in thinking that the Marquis of Monterosato had confused them.

4. *Cerithiopsis ridicula*,[1] n. sp. (Pl. XXXVIII. fig. 1).

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Off Wednesday Island, Cape York, North-east Australia. 8 fathoms. Coral mud.

Shell.—Very small, oval, dark-brown, with three rows of strong tubercles on each of the three later whorls, a deeply furrowed suture, a contracted last whorl, and a high white apical spike. *Sculpture:* Longitudinals—there are rows of raised and rounded threads, parted by rather deep square furrows of nearly the same size as the threads; these rows run continuously down the spire, being only interrupted by their splitting into two here and there as the rows increase in number (to about 20 on the last whorl). Spirals—there are on each of the three regular whorls three threads much like the longitudinals, and parted by similar furrows; these threads, in crossing the longitudinals, are topped by small neat round tubercles, which quite cover the intersection; on the back of the outer lip they are elongated; the highest row of these tubercles is slightly the largest of the three; on the full and produced base there is one spiral thread which is subtubercled, a second, strong but without tubercles, coils round the bottom of the pillar, and the third half-way up the pillar is small, but still rather strong. *Colour* dark transparent brown,

[1] So called from the pretentiousness of its extreme smallness.

which, on the upper spiral, is somewhat darker than elsewhere; the tubercles are slightly whitened, the apical style is transparent white, the outer lip is pale. *Spire* short, conical, with convex outlines. *Apex* long and cylindrical; it consists of 4 minute short broad convex whorls, which are glossy and hyaline; the lower half of the last of these is occupied by the normal sculpture of the shell; this apex is not quite in the axis of the shell, but leans slightly to one side. *Whorls* 3, regular; the periphery occurs about the middle of the shell; above this the whorls are conical upwards, below it downwards, but in the latter case attenuation is less than the contraction upwards, the front of the shell being broad and obliquely truncate in consequence of the outer lip advancing further than the pillar-point. *Suture:* its position is strongly defined, but itself is quite invisible. *Mouth* roundly and obliquely oval, having a pinched-in sinus at the upper corner and a canal at the point of the pillar. *Outer lip* level on the edge, a little sinuous about the sinus, semicircular in its curve, nearly white in colour; on the base it projects considerably beyond the pillar. *Pillar* very short, very broad; its whole top encircled by the minute deep canal. *Inner lip* semicircular in its curve, with a well-defined edge, which is dark brown in colour. H. 0·055 in. B. 0·023. Mouth, height 0·014, breadth 0·012. Apex, height 0·011, breadth 0·007.

This is a very curious little shell, which exceeds its congeners in pretentiousness, self-containedness, self-satisfaction, and general absurdity; its several parts are really very admirable, but there is a want of consistency about them which seemed to suggest the name sufficiently to relieve it from the charge of mere subjectivity.

5. *Cerithiopsis turrigera*,[1] n. sp. (Pl. XXXVIII. fig. 2).

July 1875. Reefs off Honolulu. 40 fathoms.

Shell.—Small, subcylindrical to elongate-oval, ochrey-yellow, with two rows of largish tubercles on all the regular whorls but the last, which has four, a furrowed suture, and a long slightly irregular apex. *Sculpture:* Longitudinals—there are about 15 slightly raised threads, which do not run continuously from whorl to whorl; they are parted by shallow furrows of very similar form to the threads, and the system continues to the very point of the base. Spirals—there are two rows of strong slightly elongated tubercles on each of the whorls but the last, on which there are four rows, the parting furrows are squarish and are pretty strong, but not so strong as that which lies at the suture; on the base round the pillar coils an untubercled thread, and a much stronger one forms the point of the very squat pillar. *Colour* ochrey-yellow, with touches of white on the tubercles; the apex is pale. *Spire* high, narrow, cylindrical, contracting to the top. *Apex* long and subcylindrical, but slightly irregular, tapering towards the tip, not quite

[1] So called from the form of its apex.

straight set on; it consists of 4½ whorls, the third of which is perceptibly more tumid than the rest; and the last begins to spread out as a sort of base to the pillar-like style. *Whorls* 7½, regular, flat-sided, and cylindrical, only at the very top and bottom conical; the last whorl is slightly, slowly, and conically contracted to the point of the base; the edge of the lip is very prominent at the side outline, and in front passes beyond the pillar-point. *Suture*: its position is well defined by the furrow, but itself is quite invisible. *Mouth* gibbously round, with a small sinus above and a very small but deep canal in front, which twists in towards the back of the pillar, and in front is almost closed by the overlapping of the lips. *Outer lip* thin, patulous, concave above, very prominent, and slightly angulated at the corner of the base, a little straight in front; at the canal the lip-corner runs out into a little point, covering and almost touching the tip of the pillar; the edge of the canal is slightly reverted. *Pillar* very short and stumpy. *Inner lip* pretty thick on the body, with a well-defined edge, especially on the pillar; concave. H. 0·11 in. B., in the middle, 0·034; at the last whorl, 0·032. Mouth, height 0·023, breadth 0·018. Apex, height 0·014, breadth 0·009.

This species in a general way is not unlike some of the dwarf forms of *Cerithiopsis tubercularis* (Mont.,) but in details of sculpture, and especially in its singular apex, it is very different.

Family CERITHIACEA, Menke, 1828.

Genera. 1. *Cerithium*, Adanson. 2. *Bittium*, Leach. 3. *Triforis*, Deshayes. 4. *Alaba*, H. and A. Adams. 5. *Litiopa*, Rang. 6. *Planaxis*, Lamarck.

1. *Cerithium*, Adanson, 1757.

Species.

1. *Cerithium balteatum*, Phil.
2. *Cerithium carbonarium*, Phil.
3. *Cerithium columna*, Sow.
4. *Cerithium dubium*, Sow.
5. *Cerithium novæhollandiæ*, A. Adams.
6. *Cerithium salebrosum*, Sow.
7. *Cerithium vulgatum*, Brug.
8. *Cerithium matukense*, Wats.
9. *Cerithium phoxum*, Wats.
10. *Cerithium lissum*, Wats.
11. *Cerithium* (*Lampania*) *australe*, Quoy and Gaim.
12. *Cerithium* (*Vertagus*) *articulatum*, Ad. and Rve.
13. *Cerithium* (*Vertagus*) *asperum* (Linne).
14. *Cerithium* (*Vertagus*) *kochi*, Phil.
15. *Cerithium* (*Vertagus*) *martinianum*, Pfeiffer.
16. *Cerithium* (*Vertagus*) *turritum*, Sow.

1. *Cerithium balteatum*, Philippi.

Cerithium balteatum, Philippi, Abb. und Besch., vol. iii. p. 16 (*bis*), pl. xxii. (*Gen.* i.) fig. 10.
,, ,, Sowerby, Thes., vol. ii. pt. 16, p. 862, sp. 56, pl. clxxxi. figs. 116, 117.
,, ,, Reeve, Conch. Icon., vol. xv. (1865), pl. xi. fig. 72.
,, ,, Brazier, "Chevert" Exped. Moll., Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 314, No. 11.

July 29, 1874. Levuka, Fiji. 12 fathoms.
September 8, 1874. Cape York, off Albany Island, Torres Strait. 3 to 12 fathoms.

Habitat.—Philippines (Sowerby); North Australia, Torres Strait (Brazier).

The specimens from Fiji differ from the type in the shape of the base, which is concave, and in the absence of the brown fillet round the lower part of the whorls, but agree so closely in all other respects that they must be reckoned to this species. A very characteristic feature of the species is the deep furrow at the suture, which Philippi does not mention, but to which Reeve alludes in his description.

2. *Cerithium carbonarium*, Philippi.

Cerithium carbonarium, Philippi, Zeitsch. f. Malak., 1848, vol. v. p. 142, No. 83.
„ *bornii*, Sowerby, Thes. Conch., vol. ii. pt. 16, p. 869, sp. 88, pl. clxxxii. fig. 175.
„ „ Reeve, Conch. Icon., vol. xv. pl. v. fig. 26.

May 14, 1875. Oosima, Japan.

Habitat.—China (Philippi); island of Panay (British Museum).

In regard to this species I have followed Mr E. A. Smith ("Alert" Collections, p. 65), who has pointed out that "*Cerithium tuberculatum*, Linne," which Sowerby figures in the Thesaurus (p. 870, pl. clxxii. figs. 162, 164) and Reeve in the Conchologia (fig. 21), as this species is that neither of Linne nor of Philippi, but a variety of *Cerithium patiens*, Bayle (=*Cerithium rugosum*, Wood, not Lam.), and that the *Cerithium carbonarium* figured in the Conchologia (pl. ix. fig. 59) is a form of *Cerithium morus*, Lam.

3. *Cerithium columna* (?), Sowerby.

Cerithium columna, Sowerby, Genera, vol. ii. pl. cciv. fig. 7.
„ „ Sowerby, Thes. Conch., vol. ii. pt. 16, p. 855, No. 25, pl. clxxviii. figs. 55–58.
„ „ Reeve, Conch. Icon., vol. xv. pl. i. fig. 2.
„ „ Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 314, No. 9.
„ „ v. Martens, Moll. Mauritius, &c., p. 280.
„ „ Dunker, Index Moll. Mar. Japon., p. 106.
„ „ E. A. Smith, "Alert" Collections, p. 500.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Philippines (Sowerby); Island of Masbate (British Museum); Mauritius, Red Sea, India, Ceylon, Indian Archipelago, Polynesia, and Australia (v. Martens).

The specimen obtained by the Challenger is a young shell in bad condition, whose identification cannot be considered satisfactory, but I believe it to be this species.

4. *Cerithium dubium*, Sowerby.

Cerithium dubium, Sowerby, Thes. Conch., vol. ii. p. 864, sp. 62, pl. clxxxi. fig. 120.
„ „ Reeve, Conch. Icon., vol. xv. pl. xii. fig. 78.
„ *monachus*, Crosse and Fischer, Journ. de conch., 1864, p. 347, 1865, p. 45, pl. iii. figs. 17, 18.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York, Torres Strait. 8 fathoms. Coral mud.

September 8, 1874. Flinders Passage, Cape York, North-east Australia. 7 fathoms.

Habitat.—Port Philip, South Australia, and Tasmania (British Museum).

5. *Cerithium novæhollandiæ*, A. Adams.

Cerithium novæhollandiæ, Sowerby, Thes. Conch., vol. ii. pt. 16, p. 864, sp. 63, pl. clxxviii. fig. 54.
„ „ Reeve, Conch. Icon., vol. xv. pl. v. fig. 30.
„ „ Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 314, No. 10.

September 8, 1874. Off Albany Island, Cape York, Torres Strait. 3 to 12 fathoms.

Habitat.—Cape York, North Australia (Brazier).

6. *Cerithium salebrosum*, Sowerby.

Cerithium salebrosum, Sowerby, Thes. Conch., vol. ii. p. 862, sp. 55, pl. clxxxi. figs. 114, 115.
„ „ Reeve, Conch. Icon., vol. xv. pl. x. fig. 65.
„ „ Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 315, No. 19.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Lord Hood's Islands (Sowerby); North-east Australia, 8 fathoms (Brazier).

7. *Cerithium vulgatum*, Bruguière.

Le Goumier, Adanson, Sénégal, p. 156, pl. x. fig. 3.
Cerithium vulgatum, Bruguière, Encycl. méthod. (1792), vol. i. p. 481, sp. 13.
Murex alucoïdes, Olivi, Zoologia Adriatica (1792), p. 153.
„ „ Brocchi, Conch. Foss. Subapp., vol. ii. p. 137, sp. 65.
„ „ Dillwyn, Catalogue, vol. ii. p. 751, sp. 148.
„ „ Wood, Ind. Test., p. 137, pl. xxvii. fig. 152.
Cerithium vulgatum, Lamarck, Anim. s. vert., vol. vii. p. 68, and (ed. Desh.) vol. ix. p. 288, sp. 7.
Murex fuscatus, Delle Chiaje in Poli Testac. Sicil., vol. iii. pp. 25, 48, pl. xlix. fig. 12.
Cerithium vulgatum, Philippi, Enumeratio Moll. Sicil., vol. i. p. 192, pl. xi. figs. 3–6, 8, 9, vol. ii p. 161.

Cerithium vulgatum, Kiener, Iconog., p. 29, sp. 20, pl. ix. fig. 2.
" " v. Middendorff, Malak. Ross., vol. ii. p. 48, sp. 1.
" " d'Orbigny, Moll. Canaries, p. 92, No. 142.
" " M'Andrew, Distrib. Test. Moll. North Atlantic, &c., p. 31.
" " Sowerby, Thes. Conch., pt. 16, p. 864, sp. 64, pl. clxxviii. fig. 43, pl. clxxix. fig. 67.
" " Reeve, Conch. Icon., vol. xv. pl. ii. fig. 9.
" " Weinkauff, Conch. Mittelmeeres, vol. ii. p. 154, sp. 1.
" " Monterosato, Enumerazione, p. 37.
" " Seguenza, Form. Terz. Calabria, p. 51.
" " Dautzenberg, Coq. Golfe de Gades, Journ. de conch., 1883, p. 317, No. 195.

December 1873. Simons Bay, Cape of Good Hope. 15 to 20 fathoms.

Habitat.—The Black Sea (v. Middendorff); the whole Mediterranean, and the North Atlantic from France to Senegal.

Fossil.—From the Middle Miocene, or Aquitanian, of Southern Italy onwards (Seguenza).

Weinkauff (*loc. cit. supra*) says that this species was got by McAndrew in Madeira, but this is a mistake; it is not found in that island, though along with other exotic species it was once brought to me by boatmen there. I have it, however, among various species got by the Rev. R. T. Lowe on the Selvagens, islands about two-thirds of the way from Madeira to the Canaries.

It is, like other species of protracted existence, both widely distributed and very variable in form.

8. *Cerithium matukense*, Watson (Pl. XL. fig. 2).

Cerithium matukense, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 105, sp. 5.

Stations 173 and 173A. July 24, 1874. Lat. 19° 9′ 35″–32″ S., long. 179° 41′ 50″–55″ E. 310 to 315 fathoms. Coral mud.

Shell.—A tall, narrow, sharply-pointed cone, somewhat tumid in the last whorl, with little sculpture, but with largish white varices, and beautiful glossy brown spiral threads, speckled with white on a dull translucent white ground. *Sculpture:* Longitudinals—the upper whorls are thickly set with narrow, close, curved, tubercled ribs, which run with a slight twist almost continuously from whorl to whorl; irregularly, but on nearly each whorl, one of these ribs swells and broadens as a white varix. On the later whorls the ribs are much less marked and the tubercles crowd closely together on the spiral threads; the varices, too, become larger, and appear at the distance of $1\frac{1}{2}$ whorls; the surface is also thickly set with fine sharpish hair-like lines of growth. Spirals—Besides one in the suture concealed by the succeeding whorl, there are on the small apical whorls 3, but on the last 13 or 14 whorls there are 4 narrow well-defined rounded glossy spiral threads; on the last whorl, in its latter half, one or two more narrower threads appear on.

the upper side of the whorl; on the base they are narrower and set more closely, and four or five delicate ones ornament the pillar. On the last whorl especially the upper spirals are studded with close-set small round tubercles. The interstices are about three times as broad as the threads themselves, and are delicately fretted with very fine spiral lines. *Colour* a translucent white, dead towards the apex, with some irregular brownish stains on the spire; the varices are dead-white, the spiral threads are brilliant brown and are spotted with white tubercles. *Spire* tall, conical, and a little bent. *Apex* sharp but rounded. *Whorls* 20, of very slow and regular increase, scarcely convex, but the last is a little tumid, flattened on the base, but not at all angulated, and bisected by an exceptionally large varix. *Suture* linear, but with a very slight impression. *Mouth* nearly semicircular, from the great sweep of the outer lip, and the very slight relative concavity of the whole inner lip from the upper corner of the mouth to the point of the pillar; porcellanous within. At its upper angle there is a narrow little corner formed by a slight contraction of the lip towards the body, and by the elevation of the second basal thread into a tooth by a porcellanous thickening at this point. *Outer lip* ascends slightly on the body-whorl, towards which at the same time it is a very little pinched in. From this point to the edge of the canal it forms a very equable curve; slightly retreating at first so as almost to form a shallow open sinus, it is thrown out into a wing-like projecting expansion in the middle. It is patulous, reverted, thin on the edge, but thickened within by a glossy porcellanous callus, stained dark brown at the ends of the spiral threads. The short anterior canal bends over towards the pillar, is well defined, round, with the oral lips a little contracted, and its front margin a good deal reverted. The *pillar* is short, straight, narrow, at the point sharp and bent to the left, with a narrow and twisted edge; in colour porcellanous white. *Inner lip* is glossy, rising into a tooth on the first intra-oral thread, spread out on the body, with a slightly thickened and well-defined edge on the pillar. H. 1·6 in. B. 0·47, least do. 0·34. Penultimate whorl, height 0·23. Mouth, height 0·32, breadth 0·27.

This species in form and colour is not unlike *Cerithium longicaudatum*, Adams and Reeve, or *Cerithium attenuatum*, Phil., but in details of whorls and of sculpture it is totally different.

9. *Cerithium phoxum*,[1] Watson (Pl. XL. fig. 3).

Cerithium phoxum, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 106, sp. 6.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Shell.—Sharply conical, on the base contracted and a little obliquely flattened, longitudinally ribbed with spiral tubercled threads, of a certain waxy whiteness tinged with yellow and ruddy brown. *Sculpture:* Longitudinals—there are from ten to eleven straight

[1] φοξός, tapering.

but oblique riblets on each whorl; on the earlier whorls they are pretty continuous, with a sinistral twist round the spire, but on the later whorls they become less regular. Besides these there are fine scratch-like lines of growth. Spirals—on the upper whorls there are four, on the later five, which, as they cross the riblets, rise into tubercles. They are parted by intervals of two to three times their width, and in these intervals two or three narrower but similar threads appear, as they do also on the base, where there are two stronger circumbasal threads and a multitude of finer hair-like spirals, which extend to the point of the pillar. Besides these the whole surface is covered with finely fretted microscopic spirals. *Colour* a delicate waxy straw colour, with stains of a brownish flesh tinge. *Spire* very slightly scalar, straight, and very sharply conical. *Apex* fine. *Whorls* 14, of slow increase and straight outline, with about one varix on each. *Suture* a very little impressed at the base of each whorl. *Mouth* oval, with a sharp angulation at the canal and at the upper corner, where the lip is sinuated and pinched in against the body-whorl, and where the corner is further narrowed into a little canal by the strong tooth which rises nearly on the interior basal thread. *Outer lip* sharp, fluted on the edge, thickened by an external varix; ascending a little at its junction with the body-whorl it retreats so as to form a slight sinus; it sweeps round with a very equable curve, advancing about the middle into a patulous wing-like projection; across the base it is flat, advancing, but scarcely patulous. The anterior canal is rather narrow and deep, short, bent back, and with its front margin reverted all round except on the pillar. *Pillar* short, angulated, and slightly twisted in front where it bends to the left, sharp-pointed. *Inner lip* thickened, and forming a ledge along its whole length. H. 0·8 in. B. 0·27, least 0·22. Penultimate whorl, height 0·12. Mouth, height 0·2, breadth 0·17.

10. *Cerithium lissum*,[1] Watson (Pl. XL. fig. 4).

Cerithium lissum, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 107, sp. 7.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Shell.—Conical, rather stumpy, a little contracted and drawn out on the base, longitudinally ribbed, smoothed, of a brownish-white colour. *Sculpture:* Longitudinals—towards the apex there are on each whorl about twelve small, rounded, rather hunchy, straight and regular ribs, parted by hollows broader than the ribs; these very soon become less regular, and, though larger, are less so relatively to the size of the whorls and to the breadth of the hollows between them. On the penultimate whorl they become nodose, especially on the lower part of the whorl, and on the last whorl they are almost entirely replaced by unconnected rows of tubercles. The surface is very faintly scratched with lines of growth. In the middle of the last whorl there is a pretty strong white varix,

[1] λισσός, smooth.

broad above and projecting below. Spirals—there are many (on penultimate whorl about 20) irregular, unequal and unequally-parted scratches, three or four of which are markedly larger than the rest. Raised between these lie minute hair-like lines, with here and there a flat thread, which, in crossing the ribs, rise, at the top and especially near the bottom of the whorls, into rounded tubercles. On the last whorl there are four rows of these tubercles—one just below the suture, where they are broad and flat; the second small and indefinite; the third at the periphery, where, transversely long, the tubercles are sharp and small; the fourth row is within the base, and there they are very small. The pillar is feebly scored with many remote very small threads. The surface is otherwise smooth and rather glossy. *Colour* dead white, with minute longitudinal lines and spots of faint ruddy brown, with suffused stains of fainter brown; on the penultimate whorl there are five, on the last ten very fine spiral lines of the same colour. *Spire* sharply but slightly convexly and a very little gibbously conical. *Apex* sharp. *Whorls* about 14, of regular increase, flat; the last is contracted and drawn out and slightly bent from the axis of the shell, while the base is a little pinched in. *Suture* very faint. *Mouth* oval, but pointed at the canal and at the upper corner, where it is narrowed by a slight contraction of the lip and by the basal tooth; porcellanous and glossy within. *Outer lip* ascends markedly on the body-whorl, sinuated, contracted, and a little turned in above, expanded, patulous, and wing-shaped in the middle, flat and slightly turned in on the base. It is on the edge rounded, thin, irregularly channelled, with an external, narrow, projecting varix. The canal is longish, narrow, and very much cut off obliquely backwards. *Pillar* is short and narrow though strong, but rises from an elongated base; it bends to the left, and has a long fine edge on the margin of the canal. *Inner lip:* above and at the basal tooth it is thick and abrupt on the edge, but below this thin though defined; it is somewhat thicker along the canal. H. 1 in. B. 0·36, least 0·29. Penultimate whorl, height 0·17. Mouth, height 0·28, breadth 0·19.

By an error of the press this was published in the Preliminary Report as a *Bittium;* but it is an unmistakable *Cerithium.*

11. *Cerithium* (*Lampania*) *australe,* Quoy and Gaimard.

Cerithium australe, Quoy and Gaimard, "Astrolabe," Zool. vol. iii. p. 131, pl. lv. fig. 7.
„ „ Kiener, Iconog., p. 60, sp. 12, pl. viii. fig. 2.
„ „ Sowerby, Thes. Conch., vol. ii. pt. 16, p. 884, sp. 156, pl. clxxxv. fig. 266.
Lampania australis, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 208, No. 135.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Port Jackson (Angas); Van Diemen's Land and China (British Museum).

12. *Cerithium* (*Vertagus*) *articulatum*, Adams and Reeve.

Cerithium articulatum, Adams and Reeve, "Samarang" Moll., p. 43, pl. x. fig. 14, sp 1.
„ „ Sowerby, Thes. Conch., vol. ii. pt. 16, p. 852, sp. 16, pl. clxxvii. figs. 26, 27.
Vertagus reticulatus, Reeve, Conch. Icon., vol. xv. pl. iv. fig. 16.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. West of Cape York. 6 fathoms. Coral mud.

September 18, 1874. Arrou Islands. (No depth given.)

Habitat.—Coast of Borneo, China Sea (Adams and Reeve); East Indian Archipelago (Reeve).

13. *Cerithium* (*Vertagus*) *asperum* (Linne).

Murex asper, Linne, Syst. Nat. (ed. 12), p. 1226, No. 576.
„ *granulatus* (?), Linne, Syst. Nat. (ed. 12), p. 1226, No. 577.
Clava rugata, Martyn, vol. i. fig. 12, and (ed. Chenu), pl. iv. fig. 2.
Chemnitz, Conch. Cab., vol. iv. p. 322, pl. clvii. fig. 1483.
Cerithium lineatum, Bruguière, Encycl. méthod., vers, vol. i. p. 475, sp. 5, pl. ccccxliii. fig. 3.
Murex asper and *Murex granulatus*, Dillwyn, Catalogue, vol. ii. pp. 755, 756, sp. 155, 156.
Cerithium asperum and *Cerithium lineatum*, Lamarck, Anim. s. vert., vol. vii. p. 72, and (ed. Desh.) vol. ix. pp. 293, 296, sp. 19, 20.
„ *lineatum*, Quoy and Gaimard, "Astrolabe" Zool., vol. iii. p. 110, pl. liv. figs. 7, 8.
„ „ Kiener, Iconog., p. 25, sp. 17, pl. xxi. fig. 1.
„ „ Sowerby, Thes. Conch., vol. ii., pt. 16, p. 849, sp. 6, pl. clxxvi. figs. 4, 5.
„ „ Reeve, Conch. Icon., vol. xv. pl. iii. fig. 15.
Murex asper and *Murex granulatus*, Hanley, Ipsa Linn. Conch., pp. 310, 526.
Cerithium asperum, Issel, Mal. Mar Rosso, p. 275, No. 144.
„ *lineatum*, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1876, p. 319, No. 32.
„ (*Vertagus*) *asperum*, v. Martens, Moll. Maurit., &c., p. 279.

July 21, 1874. Tongatabu. Reefs.
July 29, 1874. Levuka, Fiji.

Habitat.—Indian Ocean, from the east coast of Africa and the Red Sea, to the Mascarene group of islands and Polynesia (v. Martens); Torres Strait (Brazier).

Fossil.—On shores of Red Sea (Issel).

14. *Cerithium* (*Vertagus*) *kochi*, Philippi.

Cerithium kochi, Philippi, Zeitsch. f. Malak., 1848, p. 21.
„ „ Philippi, Abbild. und Besch., vol. iii. p. 14 (*bis*), pl. xxii. (*Gen.* i.), fig. 3.
„ „ Sowerby, Thes. Conch., vol. ii. p. 853, sp. 19, pl. clxxvi. figs. 13–15.
Vertagus kochi, Reeve, Conch. Icon., vol. xv. pl. v. fig. 26.
Cerithium kochi, Lischke, Japan. Meer. Conch., vol. i. p. 72.

Cerithium kochi, E. A. Smith, Japan Gasterop., Ann. and Mag., 1875, ser. 4, vol. xvi. p. 105, No. 63.
" " E. A. Smith, Andaman Mar. Shells, Proc. Zool. Soc. Lond., 1878, p. 817, No. 56, pl. l. fig. 18.
" " v. Martens, Moll. Mauritius, &c., p. 280.
" " Dunker, Index Moll. Mar. Japon., p. 108.

September 18, 1874. Arrou Islands. (No depth given.)
October 6, 1874. Amboyna. 15 to 25 fathoms.

Habitat.—East coast of Africa (Philippi, &c.); Red Sea, Mauritius, Ceylon, Nicobars, and Malay Archipelago (v. Martens); Japan, Philippines, and Andamans (British Museum, and Lischke).

15. *Cerithium* (*Vertagus*) *martinianum*, Pfeiffer.

Murex vertagus (but not of Linne), Chemnitz, Conch. Cab., vol. iv. p. 319, pl. clvi. fig. 1480.
Cerithium vertagus (but not of Linne), Bory de St Vincent, Encycl. méthod., pl. ccccxliii. fig. 2.
Murex vertagus (but not of Linne), Wood, Ind. Test., p. 136, pl. xxvii. fig. 143 (corrected by Hanley to *Cerithium martinianum*).
Cerithium martinianum, Pfeiffer, Krit. Register zum Conch. Cab., p. 1, Diagn. 4, and p. 42.
" *procerum*, Kiener, Iconog., p. 22, pl. xviii. fig. 1.
" " Deshayes in Lamarck (ed. Desh.), vol. ix. p. 309, sp. 40.
" *fasciatum* (but not of Brug.), Sowerby, Thes. Conch., pt. 16, pl. clxxvi. fig. 6.
" *vertagus martinianum*, Reeve, Conch. Icon., vol. xv. pl. iii. fig. 14.

March 3–10, 1875. Tracey Island, Nares Harbour, Admiralty Islands.

Habitat.—The Indian Ocean.

Professor v. Martens (Meeresfauna d. Insel. Maurit., &c., p. 279) unites this species to *Cerithium vertagus* (Linne); Hanley (Ipsa Linn. Conch., p. 308) parts them.

16. *Cerithium* (*Vertagus*) *turritum*, Sowerby.

Cerithium turritum, Sowerby, Thes. Conch., vol. ii. p. 860, sp. 47, pl. clxxx. fig. 101.
" " Reeve, Conch. Icon., vol. xv. pl. xiii. fig. 88.
" " E. A. Smith, Japan Gasterop., Ann. and Mag., 1875, ser. 4, vol. xvi. p. 106, No. 64.
" " E. A. Smith, Andaman Mar. Shells, Proc. Zool. Soc. Lond., 1878, p. 817, No. 57, pl. l. fig. 19.
" " Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1877, vol. i. p. 316, No. 23.
Vertagus Pfeifferi, Dunker, Index Moll. Mar. Japon., pp. 108, 257.

September 8, 1874. Albany Island, Cape York, Torres Strait. 3 to 12 fathoms.

Habitat.—Philippines (Sowerby); Japan and Andamans (Smith); Torres Strait, 5 to 30 fathoms (Brazier).

2. *Bittium*,[1] Leach, 1847.

Species.

1. *Bittium granarium* (Kien.)
2. *Bittium lacteum* (Phil.)
3. *Bittium reticulatum* (Da Costa).
4. *Bittium enode*, Wats.
5. *Bittium amblyterum*, Wats.
6. *Bittium mamillatum*, Wats.
7. *Bittium amboynense*, Wats.
8. *Bittium pigrum*, Wats.
9. *Bittium luscinicæ*, Wats.
10. *Bittium philomelæ*, Wats.
11. *Bittium gemmatum*, Wats.
12. *Bittium pupiforme*, Wats.
13. *Bittium oosimense*, Wats.
14. *Bittium cylindricum*, Wats.
15. *Bittium abruptum*, Wats.
16. *Bittium delicatum*, Wats.
17. *Bittium aëdonium*, Wats.
18. *Bittium perparvulum*, n. sp.
19. *Bittium diplax*, n. sp.
20. *Bittium furvum*, n. sp.
21. *Bittium xanthum*, n. sp.
22. *Bittium leucocephalum*, n. sp.
23. *Bittium porcellanum*, n. sp.

1. *Bittium granarium* (Kiener).

Cerithium granarium, Kiener, Iconographie, p. 72, sp. 57, pl. xix. fig. 3.
„ „ Lamarck, Anim. s. vert. (ed. Desh.), vol. ix. p. 323, sp. 63.
„ „ Menke, Moll. Nov. Holl. Specimen, p. 20, No. 84.
„ „ Sowerby, Thes. Conch., vol. ii. pt. 16, p. 879, pl. clxxxiv. figs. 225–227.
Bittium granarium, Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 171, No. 95.
„ „ Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 208, No. 135.

April 17, 1874. Port Jackson, Sydney, Australia. 2 to 10 fathoms.

Station 163B. June 3, 1874. Lat. 33° 51′ 15″ S., long. 151° 22′ 15″ E. Port Jackson, Sydney, Australia. 35 fathoms. Hard ground. Bottom temperature 63°.

Habitat.—Timor (Kiener); Port Jackson, also St Vincent's Gulf, common under stones at low water (Angas).

2. *Bittium lacteum* (Philippi).

Cerithium lacteum, Philippi, Enumeratio Moll. Sicil., vol. i. p. 195, sp. 6, pl. ii. fig. 162.
„ *algonanum*, Sowerby, Thes. Conch., vol. ii. pt. 16, p. 878, sp. 129, pl. clxxxiv. figs. 230, 231.
„ *elegans*, Weinkauff, Conch. Mittelm., vol. ii. p. 164.
„ „ Jeffreys, Med. Moll., Ann. and Mag., July 1870 (4th ser.), vol. vi. p. 17.
„ „ Fischer, Moll. Ocean. France, Soc. Linn. Bordeaux, No. 491.
Cerithiolum lacteum, Monterosato, Enumerazione, p. 38.
„ „ Seguenza, Formaz. Terz. Calabria, pp. 263, 319, 354.

February 10, 1873. Tenerife, Canaries. 70 fathoms.

[1] Tiberi in 1869 proposed for this group the name of *Cerithiolum*, and Monterosato (Nomenclatura gen. e specif. di alcune Conch. Mediterr., p. 121), has adopted this name in the mistaken idea that *Bittium* was preoccupied among the Crustacea.

Habitat.—Mediterranean, Madeira (Watson); Atlantic coast of France (Fischer).

Fossil.—From the Middle Pliocene onwards (Seguenza).

The identification of this shell with the Madeiran species I am quite sure of, and the Marquis of Monterosato some years ago identified that Madeiran species for me with the species of Philippi. At the same time I confess the latter identification is one I would not have made, so far as I know the form which bears Philippi's name; but the Tenerife specimens are in too bad condition for much independent examination, and the inquiry as to the Madeiran species I cannot pursue further just now.

3. *Bittium reticulatum* (Da Costa).

Strombiformis reticulatus, Da Costa, Brit. Conch., 1778, p. 117, pl. viii. fig. 13.
Murex scaber, Olivi, Zool. Adriat., 1792, p. 153.
Murex reticulatus, Dillwyn, Catalogue, vol. ii. p. 758, sp. 160.
" " Wood, Ind. Test., p. 138, pl. xxviii. fig. 165.
Cerithium lima, Lamarck, Anim. s. vert., vol. vii. p. 77, and (ed. Desh.) vol. ix. p. 304, sp. 35.
" " Philippi, Enumeratio Moll. Sicil., vol. i. p. 195, sp. 5, vol. ii. p. 162, sp. 6.
" " Kiener, Iconog., p. 73, sp. 58, pl. xxiv. fig. 2 (excl. var.)
" *reticulatum*, Sowerby, Thes. Conch., vol. ii. pt. 16, sp. 130, pl. clxxxiv. figs. 228, 229
" " Reeve, Conch. Icon., vol. xv. pl. xix. fig. 134.
" " Lovén, Ind. Moll. Scandinav., p. 23, No. 176.
" " Forbes and Hanley, Brit. Moll., vol. iii. p. 192, pl. II. fig. 2, pl. xci. figs. 1, 2.
" " McAndrew, Distrib. Moll. N. Atlantic, &c., p. 40.
" *scabrum*, Hörnæs, Foss. Moll. Tert. Beckens Wien., vol. i. p. 410, sp. 21, pl. xlii. figs. 16, 17.
" *reticulatum*, Gwyn Jeffreys, Brit. Conch., vol. iv. p. 258, vol. v. p. 217, pl. lxxx. fig. 4.
" " Hidalgo, Moll. Mar. Espagne, Journ. de conch., 1867, vol. xv. p. 383, sp. 3.
" *scabrum*, Weinkauff, Conch. Mittelmeer, vol. ii. p. 161.
" " Aradas and Benoit, Conch. Mar. Sicil., p. 234, No. 634.
Cerithiolum scabrum, Monterosato, Enumerazione, p. 38.
" " Seguenza, Form. Terz. Calabria, pp. 109, 263, 319, 354.
" *reticulatum*, Seguenza, Form. Terz. Calabria, pp. 263, 319.

February 10, 1873. Tenerife, Canaries. 70 fathoms.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Habitat.—From Norway (Lovén) to the Mediterranean (Monterosato), Madeira (Watson), and the Canaries (McAndrew).

Fossil.—From the Upper Miocene of Middle and Southern Europe (Hörnæs) onwards (Seguenza).

To repeat here once more what has been so often urged by others, that the name of Da Costa has priority by fourteen years over that of Olivi, is irksome but still unfortunately necessary, so resolute are some foreign authors in clinging to their mistake on this subject.

4. *Bittium enode*, Watson (Pl. XXXIX. fig. 3).

Cerithium (Bittium) enode, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 115, sp. 16.

Station 120. September 9, 1873. Lat. 8° 37′ S., long. 34° 28′ W. Off Pernambuco. 675 fathoms. Red mud.

Shell.—Small, narrow, conical, finely ribbed, but not reticulated nor tubercled, thin, white, apex blunt and mamillated, outlines straight, square on the base. *Sculpture:* Longitudinals—there are on each whorl about 26 small, narrow, sharp, curved, distant ribs, which run continuously from whorl to whorl, and very straight down the spire. The ribs are about 0·001 in. wide, and the interstices five to six times as much; toward the apex they become more crowded. In the interstices a feebler riblet is occasionally intercalated. They die out on the base with a strong, posteriorly convex curve. Spirals—near but not just at the suture the top of each whorl projects in a sharp minute carina, defined by a spiral thread, which forms a small knot in crossing each riblet; about one-third down the whorl a very fine sharp thread runs round the shell, rising over, but scarcely forming knots on the riblets. Two-thirds down another very faint thread appears. The margin of the base is defined by a sharp, minute, knotted, carinal thread, the edge of which may be faintly traced at the bottom of each whorl, just above the suture, all the way up the spire. The base is plain but for a very faint submarginal thread. The apex is smooth and glossy, with nothing but microscopic evanescent superficial spirals. Over the whole surface of the shell there is a microscopic reticulation of faint, pretty equal, longitudinal and spiral scratches. *Colour* ivory white. *Spire* high, narrow, with perfectly straight conical outlines. *Apex* truncate, and then finished with a slightly depressed mamillate, glossy, pure white tip, consisting of a whorl and a half, which is straight on the top and not oblique. *Whorls* 9, straight or just faintly concave on the side, slightly scalar as they rise out of one another. The base is not in the least contracted, and is barely convex. *Suture* only recognisable from the slight shoulder of the whorl below it. *Mouth* small, angularly oval, with a blunt and laterally directed point above, and an oblique canal in front, which, relatively to the size of the mouth itself, is very large. *Outer lip* very straight, being neither incurved nor patulous, except round the edge of the canal, where it is slightly so. *Pillar* very short and conical, with an abrupt little broad parallel-sided style, with a very oblique, fine, rounded edge, and ending in a fine point on the left. *Inner lip* a fine glaze on the body and edge of the pillar. H. 0·19 in. B. 0·06. Penultimate whorl, height 0·028. Mouth, height 0·039, breadth 0·028.

This is a peculiarly beautiful shell, and, like *Bittium mamillanum*, Wats., from the same locality, departs widely in sculpture from the coarse type common to the genus. From that species it differs markedly in its being much stumpier in form and in the carina being placed at the top and not at the bottom of the whorls. From *Bittium amblyterum*, Wats., another deep-sea form, which it also resembles slightly, it differs in being stumpier and in having a much blunter and shorter apex.

5. *Bittium amblyterum*,[1] Watson (Pl. XXXIX. fig. 6).

Cerithium (*Bittium*) *amblyterum*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 108, sp. 8.

„ *gracile*, Gwyn Jeffreys, "Lightning" and "Porcupine," Moll. Proc. Zool. Soc. Lond., 1885, p. 54, sp. 4, pl. vi. fig. 3.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 fathoms. Volcanic mud.

Habitat.—From North of the Bay of Biscay to the North-West of Africa in from 681 to 1261 fathoms (Jeffr.)

Shell.—In general aspect very much like *Bittium metula* (Lovén), but narrower, and having a sharper apex, and in texture and ornamentation recalling an *Odostomia* of the *Chemnitzia* group. *Sculpture:* Longitudinals—there are on the last whorl twenty-one small longitudinal ribs, which run more or less continuously straight up the spire; they are curved so as to be posteriorly convex, and each bears two tubercles—one, the smaller, near the top, the other near the bottom of the whorl; their interstices are shallow, flat, and narrow. There are, besides these, faint lines of growth, which, on the base, are curvedly radiating and strong. Spirals—there is a spiral thread near the top of each whorl, connecting the upper series of tubercles, and the adjacent tubercles at the lower ends of the ribs are confluent, forming a continuous spiral; round the edge of the base is a fine round carinal thread; of microscopic spirals there seems to be no trace. *Colour* translucent white. *Spire* high, narrow, and conical. *Apex* small, glossy, roundly pointed and oblique, the extreme point rising slightly on one side. The embryonic whorls are two, slightly oblique, convex and perfectly smooth, but for some very faint spiral scratches. After these faint and sparse riblets begin to appear, and only after two more whorls do these reach distinctness. The second, though narrower, is higher than the third. *Whorls* 12, of very gradual increase, flat on the sides, slightly carinated by the projection of the lower thread of tubercles, a little contracted into the suture, on the base scarcely convex but conical. *Suture* linear and very minute. *Mouth* squarish, with a largish oblique opening into the canal, which is semicircular, a little oblique, and with very shortly reverted edge. *Outer lip* thin, straight, but strongly angled at the corner of the base. *Pillar* very short, perpendicular, rather broad, rather sharp-edged at the point, where it is obliquely truncate and tilted to one side. *Inner lip* a very thin layer of glaze. H. 0·25 in. B. 0·065. Penultimate whorl, height 0·03. Mouth, height 0·033, breadth 0·027.

While the general form of this species resembles *Bittium metula* (Lovén), the sculpture is very distinct, and the apex, though blunt, is much finer and sharper, and not inflated as in that species.

[1] ἀμβλύτερος, rather blunt.

I believe *Cerithium gracile*, Jeffr., to be identical with this species, Dr. Gwyn Jeffrey's type specimens having been carefully compared with the Challenger shell by both Mr. Edgar A. Smith and myself. The *Cerithiella Whiteavsii*, Verrill (Cat. Mar. Moll. N. Eng., Trans. Conn. Acad., 1882, vol. v. pt. 2, p. 522, pl. xlii. fig 7), a young specimen of which Prof. Verrill kindly sent me, will probably turn out on examination of a considerable number of specimens to be the same species.

6. *Bittium mamillanum*, Watson (Pl. XL. fig. 6).

Cerithium (Bittium) mamillanum, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 109, sp. 9.

Station 120. September 9, 1873. Lat. 8° 37′ S., long. 34° 28′ W. Pernambuco. 675 fathoms. Red mud.

Shell.—In general aspect very much like *Bittium metula* (Lovén), but narrower and having a still blunter and more swollen apex. *Sculpture:* Longitudinals—on the last whorl there are twenty-one small, narrow, longitudinal ribs, which are curved so as to be posteriorly convex; they appear faintly on the outer circumference of the base; the line of these from whorl to whorl runs very straight up the spire. The whorls are also microscopically striate in the lines of growth. Spirals—near the suture a spiral thread encircles the top of the whorls, and rises into minute tubercles where it crosses the ribs; near the foot of the whorls is a strong carination, and here each longitudinal rib projects strongly into a rounded, narrow, longitudinal tubercle; the base is encircled by a small sharp thread, which is undulated but not tubercled by the longitudinal ribs. *Colour* translucent white, more ivory than porcellanous. *Spire* high, narrow, and conical. *Apex* blunt, inflated, and projecting beyond the contour-lines of the spire, as if the two embryonic whorls had been squeezed down and spread out in the operation. They are glossy and quite smooth, but with a trace of spiral arrangement in the microscopic texture. Faint traces of the longitudinal ribs appear toward the end of the second whorl, and the spiral threads appear pretty strongly on the third. *Whorls* 12, of very gradual increase, slightly concave on the sides, and below the carina sharply contracted in toward the suture. *Suture* well marked by the contraction of the whorl above it and the slight angular prominence of the whorl below it. *Mouth* square and small. *Pillar* very short, perpendicular, broad, with a small, blunt, oblique but not reverted point. *Inner lip* a very thin layer of glaze. H. 0·22 in. B. 0·06. Penultimate whorl, height 0·025. Mouth, height 0·03, breadth 0·025.

The sculpture in this species resembles a good deal that of *Bittium amblyterum*, Watson, and of *Bittium metula* (Lovén); but the details of the sculpture are quite different, and the peculiar form of the apex distinguishes it easily from both. In many respects it greatly resembles *Cerithiopsis* (or *Cerithiella*) *Whiteavsii*, Verrill, but is in form more cylindrical (or less conical), the apical whorls

are much less barred longitudinally, the ribs on the regular whorls are sparser and weaker, the inferior spiral lies much lower on the whorl and forms much less of a keel, and the base is not contracted as in that species. The only specimen of this shell was unfortunately broken before it was figured.

7. *Bittium amboynense*, Watson (Pl. XL. fig. 5).

Cerithium (Bittium) amboynense, Watson, Prelim. Report, Journ. Linn. Soc. Lond., vol. xv. p. 110, sp. 10.]

October 6, 1874. Amboyna. 15 to 20 fathoms.

Shell.—Small, narrow, conical, with convex outline, a narrow, contracted and bluntly conical base, solid, opaque, dull, light brown. *Sculpture:* Longitudinals—there are on the last whorl about 20 broad, shallow depressions, parted by longitudinal rows of small tubercles, which, toward the mouth, tend to crowd out the depressions. These rows preserve no relation to each other in adjoining whorls. There is about the middle of the whorl a broad, feeble varix, which includes several of these rows of tubercles; there are besides many irregular lines of growth. Spirals—there are on the last three whorls four, and on all the preceding whorls three spiral threads, which are beset with small, low, round tubercles, which become smaller toward the mouth. Above the suture another very small spiral appears; it lies just within the contraction of the base, and has no tubercles. Within this, on the base and close to it, is another and stronger spiral. A broad, shallow, but well-defined furrow lies within this, having a minute spiral in the bottom of it. The pillar rises within this furrow, encircled by a rather strongish spiral thread, and three other finer spirals twine round it. Only on the base is there the faintest trace of excessively minute microscopic spirals. *Colour* pale yellowish brown, quite uniform throughout. *Spire* high and narrow, with convex contour-lines, which are strongly impressed at the suture. In the upper part of the spire the whorls are a little scalar. *Apex* broken. *Whorls* 9, flat, of very gradual increase. *Suture* impressed. *Mouth* square. *Outer lip* broken. *Pillar* straight, short, and broad. *Inner lip* formed by a thick layer of glaze, which presents a narrow edge on the pillar. H. 0·14 in. B. 0·05. Penultimate whorl, height 0·025. Mouth, height 0·03, breadth 0·02.

This species very much resembles *Bittium reticulatum* (Da Costa), but there is appreciable difference in its contour-lines, which are much more curved, and the upper whorls are scalar, while in the young of that species, with the same number of whorls, the contour-lines are straight and the outline perfectly conical. In this, too, the base is more contracted and hollower than in that. The apex is unfortunately broken; but the basal part of the embryonic shell is broader, less oblique, and has not the characteristic fine spiral threads which encircle the base of the second and third whorls in that species.

8. *Bittium pigrum*, Watson (Pl. XL. fig. 7).

Cerithium (*Bittium*) *pigrum*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol xv. p. 111, sp. 11.

Station 135c. October 17, 1873. Nightingale Island, Tristan da Cunha Islands. Lat. 37° 25′ 30″ S., long. 12° 28′ 30″ W. 100 to 150 fathoms.

Shell.—Tall, narrow, conical with convex outlines, blunt, flat on the base, strong, opaque white. *Sculpture:* Longitudinals—there are on the last whorl twenty-one flattish, rounded, narrow ribs, parted by depressions of about the same form and size; the surface is also very faintly microscopically striate. Spirals—on all the whorls, except the first two, there are three fine narrow spiral threads, which rise into feeble tubercles where they cross the longitudinals. The first and second are a little closer together than the second and third, which are separated by a flat space of about twice the breadth of the spirals. Below the lowest spiral there is a rather abruptly sloping but broadish contraction into the suture, close above which lies a plain, narrow, spiral thread, which on the last whorl forms the edge of the base, and is there defined by an inferior minute spiral furrow. With the exception of this and of very faint microscopic spirals and lines of growth, the base is quite plain. *Colour* dead white. *Spire* high and narrow, with slightly convex outlines; the lowest tubercled spiral on each whorl slightly projects beyond the top of the whorl which follows. *Apex* blunt and smooth. *Whorls* 13, flat on the sides, narrowed upwards, constricted at the bottom above the suture. *Suture* minute, but well defined by the furrow and by the thread which lies in the bottom of it above the suture. *Mouth* square. *Outer lip* broken. *Pillar* short but rather narrow. *Inner lip* incomplete. H. 0·36 in. B. 0·095. Penultimate whorl, height 0·04. Mouth, height 0·08, breadth 0·05.

This, as regards its sculpture, also belongs to the *Bittium reticulatum* group.

9. *Bittium lusciniæ*, Watson (Pl. XLI. fig. 1).

Cerithium (*Bittium*) *lusciniæ*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 112, sp. 12.

Station 135c. October 17, 1873. Nightingale Island, Tristan da Cunha Islands. 100 to 150 fathoms.

Shell.—Small, narrow, conical, blunt, with straight outlines, rounded but not contracted at the base, solid, translucent, glossy, white. *Sculpture:* Longitudinals—there are 17 to 18 longitudinal rows of coarse, flat, rounded tubercles, parted by furrows narrow and shallow; these lines run very straight up the spire. Spirals—on all but the first three whorls there are three equally-parted spiral threads, which rise into tubercles in crossing the longitudinals; of these three spirals the highest is the smallest and least prominent. The first whorl is smooth and glossy, with a few irregular wrinkles; the second is regularly

and curvedly ribbed and furrowed longitudinally; on the third the general sculpture of the shell begins, but the highest spiral is absent, only its place is indicated by a broader infra-sutural depression. The base has round its margin a sharp-edged thread, and close within this a very faint furrow. *Colour* translucent glossy white. *Spire* is high, narrow, and has straight outlines. The base of each whorl projects slightly beyond the top of that which succeeds it, and the suture is sunk in a well-marked furrow. *Apex* is abrupt and rounded, but the extreme point is obliquely prominent. *Whorls* 9, flat on the sides, narrowed upwards, and constricted at the bottom above the suture. *Suture* linear and very minute, but well marked by the furrow which lies above it. *Mouth* squarish. *Outer lip* incomplete. *Pillar* straight, short, and strong. *Inner lip* unformed. H. 0·147 in. B. 0·06. Penultimate whorl, height 0·02. Mouth, length 0·03, breadth 0·028.

The sculpture of this species is after the fashion of the *Bittium reticulatum* (Da Costa), group, but the form of the shell, its details of sculpture, and the shape of the apex are very distinct. It is not quite full-grown, so that the form of the base is not entirely developed.

10. *Bittium philomelæ*, Watson (Pl. XLI. fig. 2).

Cerithium (*Bittium*) *philomelæ*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 113, sp. 13.

Station 135c. October 17, 1873. Nightingale Island, Tristan da Cunha Islands. 100 to 150 fathoms.

Shell.—Small, narrow, conical, blunt, outlines scarcely convex, rounded at the periphery into the blunt square base, solid, dead white, not glossy. *Sculpture:* Longitudinals—on the last whorl there are 21 rows of rather coarse round tubercles, parted by very narrow furrows; these lines run very straight up the spire. Spirals—on all but the first two whorls there are three very equal spiral threads, which rise into tubercles as they cross the longitudinals; these threads do not appear on the first two whorls; they are parted by shallow furrows. The base of the whorls is sharply but shallowly contracted, and in the bottom of the contraction, above the suture, lies a small spiral, which is undulated in crossing the longitudinals, and which, on the base, forms a weak, feebly-tubercled circumferential border. *Spire* is high, narrow, and has its outlines barely curved. *Apex* is blunt and rounded, with a very minute oblique projection. *Whorls* 8, just barely convex on the sides. *Suture* very minute and linear, but well marked by the furrow at the base of the whorls. *Mouth* squarish. *Outer lip* broken. *Pillar* straight, short, and broad. *Inner lip* a layer of glaze crossing the body and twining round the pillar. H. 0·128 in. B. 0·05. Penultimate whorl, height 0·025. Mouth, height 0·03, breadth 0·02.

This species, in its sculpture, belongs to the *Bittium reticulatum* group. Than *Bittium lusciniæ*, Wats., which it resembles, it is much smaller, more delicate in sculpture; the apex is less squeezed down than in that species.

11. *Bittium gemmatum*, Watson (Pl. XXXIX. fig. 2).

Cerithium (Bittium) gemmatum, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 113, sp. 14. (Not *Cerithium gemmatum*, Hinds, "Sulphur" Exped., p. 47, pl. xi. figs. 5, 6.)

Cerithium Watsoni,[1] Gwyn Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1884, p. 56, sp. 8, pl. vi. fig. 6.

Station II. January 13, 1873. Lat. 38° 10′ N., long. 9° 14′ W. Setubal. 470 fathoms. Green mud.

Habitat.—Off the Southern Spanish coast at various of the "Porcupine" Stations, in from 27 to 994 fathoms (Jeffr.)

Shell.—High, conical, not narrow for the genus, blunt, with straight outlines, distinct suture, rounded base, tubercled, thin, translucent white. *Sculpture:* Longitudinals—the whorls are crossed by oblique, curved, and tubercled ribs, of which there are on the last whorl 17, on the preceding 14, and they diminish rapidly in number. They are quite obsolete near the mouth, and die out on the base; they are parted by open longitudinal furrows fully wider than themselves. The furrows and ribs run down the spire from whorl to whorl without a twist, but with a strong sinistral obliquity. There are a very great many fine irregular and unequal lines of growth. Spirals—each whorl is carinated by two strongish rounded spiral threads, which rise into largish tubercles on the longitudinal ribs; the upper is rather the stronger and more prominent; near the mouth they both become feebler: the tubercles on the upper thread are smaller, while on the lower they disappear. These spirals are parted by a flat shallow furrow about twice as wide as themselves. Below the under spiral the whorls contract into the suture, above which is a very narrow flat thread, which on the base forms the strongish marginal border. Above the upper spiral the whorls also contract, and immediately below the suture there is a very small and feebly tubercled spiral. On the base, within the marginal thread, is another. The centre of the base is plain and a little impressed; here there are two fine threads, while a third, very minute, twists round the pillar itself. The whole surface is fretted with minute microscopic spiral scratches. *Colour* translucent white. *Spire* is high, and has straight outlines. *Apex*, which is blunt and perfectly rounded and glossy, has two whorls. *Whorls* 12 in all, of regular increase, convex, being constricted above and below. *Suture* linear, but well marked. *Mouth* oval, scarcely pointed above, and with an open shallow canal in front, resembling that in *Bittium reticulatum*. *Outer lip* very thin, very slightly ascending where it joins the body, forming an equable, nearly semicircular curve to the edge of the canal. *Pillar* very short and little projecting, with a distinct twist; at the point small, rounded, and narrow-edged. *Inner lip* forming a continuous curve across the body and up the pillar; on the body it is a thin glaze, but its edge on the

[1] This change is unnecessary, as Hind's species is not a *Bittium*.

pillar is thicker and more defined. H. 0·31 in. B. 0·09. Penultimate whorl, height 0·04. Mouth, height 0·066, breadth 0·05.

The sculpture of this species always tends to become obsolete on the last whorl, but in some specimens the whole sculpture on all the whorls is so feeble as greatly to alter the whole appearance of the shell.

12. *Bittium pupiforme*, Watson (Pl. XLI. fig. 3).

Cerithium (*Bittium*) *pupiforme*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. 'Lond., vol. xv. p. 114, sp. 15.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud.

Shell.—Small, narrow, conical, blunt, with convex outlines, contracted both toward the apex and the point of the base, reticulated, tubercled, solid, translucent, glossy, white. *Sculpture:* Longitudinals—there are on the last whorl about 25 rows of small, rounded, adjacent tubercles; they are parted by mere lines, and run pretty straight, but with a slight sinistral turn down the spire. On the upper part of the spire the rows are straight, but in the penultimate whorl, where the shell begins to contract toward the base, the rows have a slight concave and dextral curve. Spirals—on each whorl there are three equal spiral threads, which form the tubercles as they cross the longitudinal rows; they are parted by two narrow and shallow furrows; there is a strong deep sutural furrow. Besides these there are quite inconspicuous microscopic longitudinal and spiral lines on the surface. The very narrow base is encircled by a strong rounded prominent thread, within which a deep furrow surrounds the pillar. *Colour* translucent white. *Spire* high and narrow, with convex outlines. *Apex* extremely abruptly truncate, rounded. The smooth embryonic shell consists of 1½ whorls, and the tip of it scarcely rises into sight. *Whorls* 9, contracted upwards, flat on the sides. The base is extremely contracted; and as the contraction begins in the penultimate whorl, the form of the shell resembles the pupa of an insect. *Suture* only defined by the deep furrow in which it lies. *Mouth* oval, with a very small channel in front. *Outer lip* broken. *Pillar* very short, strong, but not broad; the point is in the only specimen slightly broken. H. 0·1 in. B. 0·037. Penultimate whorl, height 0·02.

In general form, but in that alone, this is very like some of the ill-thriven-looking forms of *Cerithiopsis minima* (Brusina), but is obviously very different.

13. *Bittium oosimense*, Watson (Pl. XXXIX. fig. 1).

Cerithium (*Bittium*) *oosimense*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 117, sp. 17.

May 14, 1875. Oosima, Japan.

Shell.—Small, broadish, conical, pointed, thin, brownish grey, with white and brown spots, whorls carinated, semi-imbricated, corrugated longitudinally, not reticulated, tubercled, variced. *Sculpture:* Longitudinals—there are on the penultimate whorl 13 depressed rounded, slightly oblique ribs or corrugations, parted by furrows, shallow, rounded, and narrower than the ribs. These ribs diminish in number upwards on the spire, down which they run from whorl to whorl, with a slight oblique twist from left to right. On the last whorl one of these is strengthened into a feeble varix, but the rest become increasingly inconspicuous, and at last scarcely recognisable; on the base they are still traceable as faint corrugations. Spirals—each whorl, at about one-fourth of its height from the suture, projects in an angular carination, which carries a small, but distinct rounded thread, rising into transverse tubercles where it crosses the longitudinal corrugations. Above this carinal thread there are four very small flat spiral threads, equal, and equally parted by three small furrows, in each of which lies a minute spiral thread. The furrow which separates the lowest of these four spirals from the carinal thread is plain, having no minute spiral in it. Below the carinal angulation the whorls are constricted. Within this constriction there are on each whorl two small alternating furrows and threads, then a comparatively broad and deep furrow, below which a small spiral thread lies immediately at the suture, but above it. It is this supra-sutural thread which forms the edge of the base, and is there nearly as strong as the carinal thread. Its inner side is defined by a strongish furrow, within which the whole base to the point of the pillar is covered with small alternating threads and furrows, in number about 9, of which the first and the fifth thread are a little stronger than the rest. Besides these, the whole surface is microscopically covered with sharpish spirals and slight lines of growth. These last are very distinct toward the point of the pillar. *Colour* brownish grey, with porcellanous white spots where the spirals cross the corrugations, and with a good deal of suffused ruddy brown, especially on the base and about the suture; the edge of the pillar is deeply tinged with this colour. *Spire* pointed, conical, with straight profile lines, angulated by the pagoda-like projections of the whorls at the carina, and their constrictions below this into the suture. *Apex* small and rounded. *Whorls* 11, of very gradual and regular increase, straight on the side, contracted upwards into the suture, and overhung by the projection of the preceding whorl above. The base is conical and very slightly concave. *Suture* invisible, though its situation is strongly defined by the supra-sutural furrows. *Mouth* rather large, oval, bluntly pointed at the upper outer corner, and with a small open canal beyond the point of the pillar. *Outer lip* thin, corrugated, slightly expanded above, extremely patulous and projecting on the whole base, slightly pinched in at the side of the canal, advancing markedly beyond the point of the pillar, with a patulous and very slightly reverted sharp edge round the canal. *Pillar* straight, prominent, rounded, not short, but not projecting so far as the outer lip; its edge is finely rounded, but not sharp; its point is cut off quite straight, transversely, and is

rounded. *Inner lip* a thin glaze on the body, but with a distinct edge, which is slightly thickened toward the point of the pillar. H. 0·21 in. B. 0·084. Penultimate whorl, height 0·035. Mouth, height 0·06, breadth 0·047.

The peculiar semi-imbricated growth of the whorls in this species recalls somewhat the curious *Cerithium dubium*, Sow.; but the species differ obviously in size, form, and sculpture.

14. *Bittium cylindricum*, Watson (Pl. XXXIX. fig. 5).

Cerithium (*Bittium*) *cylindricum*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 118, sp. 18.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Shell.—Small, high, narrow, pointed, cylindrically conical, reticulate, tubercled, strong, dark brown. *Sculpture:* Longitudinals—there are on the last whorl about 25 narrow, posteriorly convex, curved riblets, which cannot be followed from whorl to whorl down the spire, and which hardly appear on the base amidst the strong curved lines of growth found there. These riblets are parted by squarish furrows about as broad as themselves. Spirals—there are on each whorl three pretty equal, squarish, not much prominent, spiral threads, which become prominent themselves and give prominence to the longitudinals by expanding into round-topped tubercles as they cross the riblets; they are parted by furrows, which are of about the same breadth as themselves; the sutural furrow is slightly deeper and broader than the others. The edge of the base is squarish, and is defined by a narrow, sharpish-edged spiral thread. The base, which is flatly conical, is plain but for the lines of growth; the pillar is defined by a minute, sharpish spiral thread, which runs round its top and meets the slit of the canal. Besides these the whole surface of the shell is microscopically scored with irregular lines of growth and fine spiral scratches. *Colour* dark ruddy brown, uniform all over. *Spire* high, narrow, pointed, with straight but slightly angulated contour lines; the first eight whorls expand regularly, so as to form a minute cone, while the last four expand more slowly, so as to give more of a cylindrical shape. *Apex* small, blunt, rounded, slightly oblique, and a little immersed. *Whorls* 13, flat, except the last, which is slightly convex, with a somewhat flat but conical base. *Suture* in the bottom of a deep furrow is concealed by a projection of the inferior whorl. *Mouth* oval, with a small rounded sinus at the upper outer corner, and a largish and deepish canal running in behind the pillar. *Outer lip* not expanded, deeply corrugated by the ends of the spirals, with a deep V-shaped fissure forming the canal. *Pillar* straight, not short, pretty strong, with a rounded, narrow, twisted edge, and a small but not sharp point, which is very slightly reverted. *Inner lip* little more than a film on the body and pillar. H. 0·27 in. B. 0·064. Penultimate whorl, height 0·031. Mouth, height 0·042, breadth 0·028.

15. *Bittium abruptum*, Watson (Pl. XLI. fig. 4).

Cerithium (*Bittium*) *abruptum*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 119, sp. 19.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Shell.—Small, narrow, conical, blunt, in general form very like a decollated *Cerithiopsis metaxæ*, solid, translucent, white. *Sculpture*: Longitudinals—there are on the last whorl about thirteen, on the earlier, fewer longitudinal ribs, which are low and narrow, and are parted by flat and broader furrows. They come down the spire, from whorl to whorl, with a strong twist. The embryonic whorls have ten or twelve small ribs. Spirals—except on the first two whorls there are on each whorl four narrow, rounded, prominent spiral threads, which rise, as they cross the longitudinals, into pointed high tubercles. The furrows which part them (except that between the third and the fourth) are narrower than the spirals. The highest of these spirals is the weakest and least prominent, being pinched in by the superior contraction of the whorl into the suture. Close above this highest spiral runs the suture. The base of each whorl is roundly but rather abruptly contracted, so that the sutural furrow has its upper side abruptly, its under side gradually, declining. The base, which is oblique, concave, and contracted, has a strong plain spiral thread round its edge, and a very minute thread encircling the top of the pillar, the scar of the siphonal cut. Besides the larger systems of sculpture, there are some faint and irregular traces of microscopic rounded longitudinals and sharper spirals. *Colour* translucent white. *Spire* high, narrow, with very straight outlines, and scarcely contracted. *Apex* excessively blunt and abrupt, the extreme point being rounded and barely rising into view; it is quite smooth and polished. The second whorl is longitudinally ribbed and polished; on the third the ordinary sculpture begins. *Whorls* 11, convex, constricted suddenly below and gradually above. *Suture* excessively minute and faint in itself, but its place strongly marked by the constriction of the whorls above and below. *Mouth* very small, oval, perpendicular, pointed above, and with a large open rounded slit in front, whose edge is hardly reverted. *Outer lip* thin, advancing on the base much beyond the point of the pillar. *Inner lip* a thin glaze, with microscopic corrugations on the pillar. *Pillar* very short, with a broad top spreading out to meet the outer lip, straight, the point broad but sharp. H. 0·23 in. B. 0·05. Penultimate whorl, height 0·03. Mouth, height 0·028; breadth 0·02.

This species in general aspect is very like *Cerithiopsis metaxæ* (Chiaje), but differs in not having the sharp sculptured apex; the whorls, in consequence of the sutural contraction, are more rounded; the longitudinals are swellings of the whole shell, not, as in that other, mere projecting tubercles; the spirals are more definitely continuous; the longitudinal rows of tubercles run less definitely from whorl to whorl, and have a strong twist as they proceed down the spire, while in *Cerithiopsis metaxæ* their continuous lines are very straight.

16. *Bittium delicatum*, Watson (Pl. XLI. fig. 5).

Cerithium (Bittium) delicatum, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 120, sp. 20.

Station 135*c*. October 17, 1873. Nightingale Island, Tristan da Cunha Islands. 100 to 150 fathoms.

Shell.—Small, narrow, conical, blunt, rather tumid on the base, ribbed but not reticulated, thin, translucent, glossy, white, with slightly convex outlines. *Sculpture:* Longitudinals—there are on each whorl about 17 narrow, straight, rather tumid ribs, parted by furrows of about the same breadth. These ribs run straight down the spire, but are on the body-whorl slightly oblique. This whole system of ribs and furrows ceases abruptly at the edge of the base through a levelling up of the surface. There are many microscopic rounded lines, which are most distinct in the furrows, but especially on the base. Spirals—there are faint and minute spiral threads, best seen near the suture; and there are also indistinct close-set microscopic threads. The top of the pillar is encircled by a minute sharp thread, which is the scar of the siphonal cut. *Colour* clear, translucent, and glossy white. *Spire* high, narrow, with slightly convex outlines, which are strongly impressed at the suture. *Apex* rather abrupt, blunt and rounded; the extreme point hardly rises above the general curve. *Whorls* 9, rounded, but a little flattened on the sides, and constricted at the top and bottom of each; they are of slow and regular increase; the last is a little larger in proportion than the rest. The base is rounded and a little tumid. *Suture* a minute line lying in a deep, open, and rounded depression. *Mouth* bluntly pointed above, with a rather broad rounded opening for the canal at the side of and behind the pillar. *Outer lip* rounded, slightly incurved above, patulous and projecting on the base, slightly retreating towards the canal, the edge of which is straight all round. *Pillar* rather short, but not stumpy, scarcely at all twisted, and very little truncated, the end being very much rounded, though there is a slight point on the left side. *Inner lip:* there is a very thin glaze on the body, which runs straight out on the pillar with a thinnish, but distinct edge. H. 0·133 in. B. 0·04. Penultimate whorl, height 0·02. Mouth, height 0·03, breadth 0·019.

In many of its features this shell is like a minute *Terebra*, but the form of the whorls rather suggests *Bittium*. Unfortunately the canal is slightly chipped. It is much smaller than *Cerithiopsis costulata* (Möller); the ribs, too, are much smaller, and the apex is more turbinate. Than *Cerithium naiadis*, Woodward,[1] this species is much slimmer, and has not the well-marked spirals.

[1] Dr Gwyn Jeffreys assures me this species of Woodward is really the same as the *Cerithiopsis costulata* (Möller). Not having opportunity now of comparing them, I state the fact on his authority.

17. *Bittium aëdonium*,[1] Watson (Pl. XLI. fig. 6).

Cerithium (*Bittium*) *aëdonium*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 121, sp. 21.

Station 135c. October 17, 1873. Nightingale Island, Tristan da Cunha Islands. 100 to 150 fathoms.

Shell.—Small, narrow, conical, blunt, with faintly convex outlines, which are deeply broken at the sutures, rather abruptly truncate at the base, reticulately tubercled, solid, translucent, glossy, white. *Sculpture:* Longitudinals—there are on the last whorl 19 rows of small, narrow, but longish, rounded, rather coarse tubercles, parted by furrows, which are shallow, rather unequal, and fully broader than the ribs. There are over the whole surface fine irregular lines of growth, which are, as usual, strongest on the base. Spirals—on all but the first two whorls there are three spiral threads, which rise into tubercles as they cross the longitudinals; they are parted by deep narrow furrows; of these three the two lower are strong, the upper of the two being a little the stronger and more prominent. The third and highest spiral is not materially smaller than the others, but is much less prominent, the whole whorl being at this part constricted. The suture lies immediately above this spiral. Beneath the lower spiral the whorl is sharply constricted, and a very minute plain spiral lies in the bottom of the furrow and immediately above the suture: this minute spiral is the edge of the strongish spiral which encircles the base. Round the top of the pillar is a minute sharp spiral thread, which runs round the back into the columellar canal. There are microscopic spirals over the whole surface. *Colour* pure translucent white. *Spire* is high and narrow: its outlines, which are a good deal interrupted by the sutural constriction, are slightly convex. *Apex*, of $1\frac{1}{2}$ whorls, is tumid, bluntly rounded, a little oblique, and glossy white. *Whorls* 9, rounded, contracted above and constricted below. The base is rather truncate and rounded. *Suture* very minute, but well indicated by the broad open furrow in which it lies. *Mouth* oval, little pointed above, with a small well-rounded canal at the pillar. *Outer lip* sharp, scarcely incurved above, not prominent, but patulous below, angulated at the corner of the canal, round which it is scarcely reverted. *Pillar* straight, prominent, and pretty strong, with a sharp twisted edge at its point. *Inner lip* a mere glaze on the body, but forming a thin distinct edge along the length of the pillar. H. 0·17 in. B. 0·057. Penultimate whorl, height 0·032. Mouth, height 0·039, breadth 0·025.

This species is more like *Bittium cinctum*, Watson, and *Bittium depauperatum*, Watson, than anything else I know. These are both Madeiran species. Its whorls are much more rounded than in either of these. The base is not produced into a rounded cone as in *Bittium cinctum*, Da Costa, but is rather abruptly truncate and very slightly contracted; it is also plain, and has not the spiral threads which appear on these two species. The contraction of the whorls into the suture makes

[1] ἀηδόνιος, belonging to a Nightingale.

the outlines of the spire very different, and the apex (which, as in the case of these two species, is mamillate, and distinct from the acute form of *Bittium reticulatum*, Da Costa) is more oblique than it is in these.

The last four species, *Bittium cylindricum*, *Bittium abruptum*, *Bittium delicatum*, and *Bittium adonium*, I keep here together. They have undeniably the deep oblique siphonal cut on the base toward the point of the pillar, which is a very marked feature in *Cerithiopsis;* but the form of the canal is very variable in all the group, and the elongated and sculptured apex, which is a still more characteristic feature of *Cerithiopsis*, is wanting; and thus, in the absence of the animal and operculum, I prefer classing them as above with *Bittium*. I confess, however, that on both of these grounds *Cerithiopsis costulata*, Möller, seems quite as doubtfully entitled to rank as a *Cerithiopsis*. There are others, too, which have gone before, that will probably in the end claim a *Cerithiopsis* relationship, but in the absence of animal and operculum cannot be confidently classed at all.

18. *Bittium perparvulum*, n. sp. (Pl. XXXVIII. fig. 3).

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ W. Inside the reef, Tongatabu. 18 fathoms. Coral mud.

September 7, 1874. Torres Strait. 7 fathoms.

September 8, 1874. Flinders Passage, Cape York, North-east Australia. 7 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud.

July 1875. Reefs off Honolulu. 40 fathoms.

Shell.—Very small, obovate to broadly elongate, and conical, pointed, pale chestnut to white, reticulated, with a small conical tip, convex whorls, an impressed suture, a short rounded and slightly conical base, and a small oval mouth. *Sculpture:* Longitudinals—there are on the last whorl about 14 rather feebly raised ribs, which are strongest at the suture and die out on the base; these do not appear on the first two regular whorls. Spirals—there are on the last whorl about eight slightly tubercled threads, of which the third faintly angulates the periphery, and the last is near the pillar; on the earliest whorls there are two, on the later three of these threads. *Colour* a ruddyish yellow or very pale chestnut, becoming nearly white on the last whorl, but sometimes dark chestnut or white throughout. There is a minute linear stain on the pillar lip. *Spire* high, and rather narrow, conical, with very slightly convex profile lines. *Apex* consists of 2 small conically globose whorls, which are smooth and rounded; the minute tip is barely but distinctly raised. *Whorls* 7 to 9 in all, small, short, faintly keeled, subshouldered, rounded; the last is a little enlarged, and has a rounded very slightly produced base. *Suture* oblique, impressed, and wide from the contraction of the whorls above and below. *Mouth* small, oval, diagonally pointed, being slightly angulated above and markedly so at the

point of the pillar, where there is a small canal, which is sometimes narrow, well-marked, and slightly oblique. *Outer lip* perfectly level in its front surface, nearly semicircular in its curve, slightly patulous on the base, and joining the point of the pillar at nearly a right angle. *Inner lip* very short, but continuous across the body, thin and slightly twisted down the pillar, the tip of which is truncated to form the generic canal, which is more or less minute, narrow, and oblique; behind the lip is a shallow umbilical depression. H. 0·057 in. B. 0·027. Mouth, height 0·02, breadth 0·014.

The paler specimens from Flinders Passage, which I take to be this species, are larger. H. 0·091. B. 0·043. Mouth, height 0·03, breadth 0·022; the proportions, however, are identical.

This species, though smaller, has a very strong general resemblance to *Bittium pusillum*[1] (*Turritella* or *Mesalia*), Jeffr., from the Mediterranean, but has the spiral threads fewer; the form and arrangement of these, especially on the base, is different, and the tip of the apex is smaller.

19. *Bittium diplax*,[2] n. sp. (Pl. XXXVIII. fig. 4).

October 6, 1874. Amboyna. 15 to 20 fathoms.

Shell.—Very small, high and conical, pointed, pale sandy-coloured, reticulated, bicarinated, with a small rounded tip, short convex whorls, an impressed suture, a small short flatly conical base, and a small round mouth. *Sculpture:* Longitudinals—there are from 10 to 15 small narrow slightly arched riblets, which above at the suture and on the base are barely visible, but rise into little sharpish tubercles on crossing the spiral threads; they are distinctly to be seen on the first regular whorl, and are more numerous there than toward the last whorl; in the full-grown shell one or two of these riblets swell into varices, which appear on the base. Spirals—there are on each whorl two fine rounded threadlets, dotted with fine rounded but sharpish tubercles, where the longitudinal riblets intersect; they are parted by a shallow flat interval of nearly double their width; above these the conical sloping shoulder of each whorl has only the feeblest trace of one or two spirals, of which one may be seen just below the suture; below the periphery are two rather sharper but untubercled spirals, of which the upper lies at the insertion of the outer lip, and can be seen in the suture all up the spire; these two basal spirals are parted by a small shallow square-cut furrow; within these spirals the base is flatly conical, slightly marked with radiating lines of growth, and occasionally with two very faint spiral threads close in to the pillar. *Colour* white, or sandy, with a tinge of chestnut toward the tip. *Spire* high and narrow, with conical barely convex profile lines. *Apex* consists of 2½ whorls, which are subdiscoidal to dome-shaped as the first whorl and a half are flat and the extreme tip is not raised. *Whorls* 9 in all, short

[1] This is an unquestionable *Bittium*; in full-grown specimens the base is "grooved" quite distinctly by the generic canal. Dr Gwyn Jeffreys' specimens must have been immature, in which state the canal does not appear.

[2] διπλαξ, in double folds, such being the sculpture.

and small, convex, keeled by the upper spiral, and slightly so by the lower one also; they have a long drooping shoulder, narrow slightly from the first to the second spiral, and are contracted to the suture below; the last is small; the rise of these short regularly but very slowly increasing whorls, with the long drooping shoulder and the squareness between the two keels, gives a pagoda-like aspect to the shell. *Suture* scarcely oblique, constricted. *Mouth* very small, gibbously round, bluntly pointed above, and in front of the pillar, where there is an angulation which represents the canal. *Outer lip* thin; from its insertion it runs straight outwards and downwards, then curves round the corner of the base, where it is flat and patulous. *Inner lip* concave throughout; it is very thin on the body, and has a thin patulous twisted edge on the short pillar. H. 0·099 in. B. 0·038. Mouth, height 0·028; breadth 0·021.

This pretty little shell is slightly like *Bittium perparvulum*, Watson, and might hastily be taken for a variety, but the obvious differences of form and sculpture stand out in stronger prominence the more carefully the shells are examined, and are accented by other points of distinction more difficult of recognition, such, for instance, as the form of the apical whorls.

20. *Bittium furvum*,[1] n. sp. (Pl. XXXVIII. fig. 5).

April 17–18, 1874. Port Jackson, Sydney, New South Wales. 2 to 10 fathoms.

Shell.—Small, narrow, conical, fine-tipped, dark chestnut, constricted at the suture, feebly tubercled, with three spiral threads on the penultimate whorl. *Sculpture:* the whole surface of the shell is microscopically striated both spirally and longitudinally, the microscopic spirals being very fine and continuous, the longitudinals coarse and irregular. Longitudinals—there are on each whorl from 12 to 15 strongish longitudinal puckers; these do not appear on the first regular whorl, but on the others are continuous from whorl to whorl; on the last two whorls two of these puckerings on opposite sides of the shell rise into largish varices. Spirals—in the middle of each whorl are three narrow but strongish prominent rounded threads, which rise into blunt, drawn-out, small tubercles, as they cross the longitudinal puckers; they are parted by broad shallow furrows; at the bottom of each whorl, in and almost concealing the suture, is another much more subdued and untubercled but undulated thread, and one still feebler encircles the top of the whorls forming the lower side of the suture; within the edge of the base is a narrower but equally raised thread; four flatter ones encompass the pillar, on which, close to its point, still one more appears. *Colour:* a rich deep chestnut-brown, flecked by the pure white of the varices, and by some irregular pale markings. *Spire* high, narrow, conical, with faintly convex outlines. *Apex* small, but blunt, consisting of three smooth whorls, the first one and a half of which are subtabulated, the second one and a half are subturbinated. *Whorls*

[1] So called from its colour

6, besides those of the embryonic shell; they are conical and flat on the sides, contracted below, short, of regular rather rapid increase; the body-whorl is a little large, and has a short rounded base. *Suture* has its position very strongly defined by the contraction at the base of each whorl, but is really all but invisible. *Mouth* gibbously and tumidly fusiform, being sharp pointed above, and also at the canal in front. *Outer lip* arched throughout. *Pillar* is longish, thin-edged, twisted, truncate in front, rich chestnut, with a very distinct small oblique canal at its point. *Inner lip* thin, concave. H. 0·112 in. B. 0·041. Mouth, height 0·032, breadth 0·022.

This is much smaller than the young of *Bittium granarium*, Kiener, and the whole sculpture is different. It is not unlike *Bittium reticulatum*, Da Costa, but the sculpture is quite distinct. The specimens are not full grown, so that the outer lip cannot be satisfactorily described.

21. *Bittium xanthum*,[1] n. sp. (Pl. XXXVIII. fig. 6).

September 7, 1874. Torres Strait, North-east Australia. 3 to 11 fathoms.

Shell.—Small, narrow, conical, very slightly constricted at the suture, fine-tipped, feebly tubercled, with four spiral threads on the penultimate whorl, and a longish base. *Sculpture:* Longitudinals—there are on the last whorl about 18 small narrow riblets, on the earlier whorls they are fewer, and so far as their increasing number allows they run continuously and straight down the spire from whorl to whorl; the parting furrows are open and shallow, and a little wider than the ribs; one or two are swollen into slight varices; they entirely disappear on the base, and do not exist on the first regular whorl. Spirals—there are on the penultimate whorl four small threads, which rise into little rounded tubercles as they cross the riblets; on the first two whorls there are but two, on the middle whorls three of these threads; below these in the contraction of the suture, but on the upper side of the suture itself, is another excessively minute threadlet not tubercled; this threadlet is seen beyond the lip insertion to be the exposed edge of the first basal thread, which is pretty strong, and lies just below the periphery; within this are four other very similar threads, while one very small one coils round the pillar; all the parting furrows are shallow and small, but rather wider than the threads; there are no microscopic spirals. *Colour* ochry yellow throughout, only the tip is paler. *Spire* high, narrow, conical, with slightly convex outlines. *Apex* small, but blunt; it consists of three smooth whorls, of which the latter two are subcylindrical, while the first is sub-immersed, the extreme tip being barely raised. *Whorls* 8, exclusive of those of the embryonic shell; they are rather short, conical, feebly contracted at the suture, barely convex-sided, of slow and regular increase, the body-whorl is slightly contracted, and has a longish

[1] ξανθός, yellow, so called from the colour.

conical base. *Suture:* its position is distinctly defined by the sutural contraction, but the suture itself is all but unrecognisable. *Mouth* small, a little oblique, oval, but pointed above and below. *Outer lip* probably thickened in the full-grown shell, well arched. *Pillar* rather long, a little oblique, with a patulous, thickened, and rounded edge, and having a small contracted oblique canal in front of the point, which is cut off backwards. *Inner lip:* pretty thick on the body, concave. H. 0·141 in. B. 0·044. Mouth, height 0·04, breadth 0·028.

The three specimens of this species have all had the mouth broken; in the one which is best preserved the break has been repaired, but the restoration has not been fully completed, the labral varix being absent. On the new part of the shell there are numerous very slight spiral threadlets, not at all connected with the normal sculpture of the shell. From the thinness of the shell these threads shine through, and are deceptively like teeth on the inside of the lip.

22. *Bittium leucocephalum*,[1] n. sp. (Pl. XXXVIII. fig. 7).

July 1875. Reef off Honolulu, Sandwich Islands.

Shell.—Small, narrow, conical, brown-topped, white-tipped, rather feebly tubercled, with three strongish spiral threads on the penultimate whorl, and a short square broad sub-excavated base. *Sculpture:* Longitudinals—there are on each whorl about 12 coarse rather ill-defined ribs, of which one or two on the latter whorls swell into poor varices; they do not appear on the first two regular whorls, and are absent on the base; the parting furrows are broad, shallow, and open. Spirals—there are on the earlier whorls two, on the later three strongish threads, which rise into wide blunt tubercles in crossing the ribs; round the base of each whorl there is a minute threadlet, which entirely masks the suture; on the base this suprasutural threadlet is pretty strong, and lies just within the periphery; within this lies a little furrow with another thread on its inner side: the centre of the base is a broad, slightly depressed furrow, within which is a small threadlet defining the top of the pillar. *Colour:* the extreme tip is white, the next two whorls chestnut, the following whorls white, the later ones pale ochry yellow. *Spire* rather high and narrow, but with a tendency to broaden, conical. *Apex* consists of two small white blunt subrounded whorls, of which the minute extreme tip is just visible. *Whorls* 8, exclusive of those of the apex: they are short, broad, and of slow increase, with a sub-conical and convex outline; the body-whorl is short, and has a flatly rounded base. *Suture* distinct, from the contraction of the whorls, but in itself invisible. *Mouth* small, square. *Outer lip* convex. *Pillar* short, truncate, with a small oblique canal in front

[1] λευκοκέφαλος, white-headed, so called from the colour of the apex.

of its point. *Inner lip* straight and thin. H. 0·107 in. B. 0·044. Mouth, height 0·024, breadth 0·022.

This little shell is very probably not full-grown, but is marked by very distinct features.

23. *Bittium porcellanum*,[1] n. sp. (Pl. XXXVIII. fig. 8).

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Raine Island, Cape York, North-east Australia. 155 fathoms. Coral sand.

Shell.—Small, narrow, conical, subscalar, porcellanous, glossy, brown-topped, white-tipped, longitudinally ribbed, barely tubercled or spiralled, with square whorls, a constricted suture, and a short flat base. *Sculpture:* Longitudinals—there are in the middle of each whorl about 15 ribs, which extend to the suture but not to the base; near the top and bottom each of these swells into a small blunt round tubercle, which is very little prominent; there is no connection between these tubercles from rib to rib; there are obsolete microscopic longitudinal scorings, which are the lines of growth. Spirals—the surface is very faintly marked with microscopic lines; the constriction at the top and bottom of each whorl forms a strong sutural furrow, the upper and under side of which is angulated by the slight projection of the rib tubercles; at the periphery round the outside of the base runs a fine thread, the upper edge of which can be seen in the sutural furrow; close within this thread lies another much like the first; close round the top of the pillar coil other two slightly feebler; the flat centre of the base is only scored by radiating lines. *Colour* porcellanous white and glossy, the apex is dull and yellowish chestnut, with a whitish tip. *Spire* high and narrow, conical. *Apex* consists of 4 conical whorls, of which the latter 2½ are chestnut coloured, are scored in the middle with two fine threads, and have on the shoulder below the shallow suture fine microscopic longitudinal puckerings; the first whorl and a half are dull whitish, and form a very small rounded top, on which the minute tip just rises into view. *Whorls* 8, besides those of the apex, short and narrow, angular, constricted above and below; the last begins to enlarge; it is angulated round the edge of the flat base. *Suture* in itself very feeble, but strongly defined by the contraction at top and bottom of each whorl. *Mouth* lozenge-shaped, having straight sides and four distinct angles. *Outer lip* straight and leaning to the right, angulated at the periphery, and then straight and slightly advancing on the base. *Pillar* long, straight, leaning a little to the left, with a thin expanded edge; in front it is narrowed off to a very fine point, in advance of which is the shallow open oblique canal. H. 0·15 in. B. 0·06. Mouth, height 0·04, breadth 0·03.

This is a very aberrant form of *Bittium*, both in colour and in sculpture, but the form of the mouth unmistakably connects it with this genus.

[1] So called from its texture and colour.

3. *Triforis*, Deshayes, 1824.

Species.

1. *Triforis perversa* (Linne).
2. *Triforis lemkensis*, Wats.
3. *Triforis bigemma*, Wats.
4. *Triforis hebes*, Wats.
5. *Triforis inflata*, Wats.
6. *Triforis dolicha*, n. sp.
7. *Triforis rufula*, n. sp.

1. *Triforis perversa* (Linne).

Trochus perversus, Linne, Syst. Nat. (ed. 12), p. 1231, No. 602.
Chemnitz, Conch. Cab., vol. ix. (1), p. 115, pl. cxii. fig. 958.
Cerithium maroccanum, Bruguière, Encycl. méthod., vers, vol. i. p. 495, sp. 34.
„ *perversum*, Bruguière, Encycl. méthod., vers, vol. i. p. 496, sp. 36.
Murex granulosus, Brocchi, Conch. foss. subappen., vol. ii. p. 449, pl. ix. fig. 18.
Trochus perversus, Dillwyn, Catalogue, vol. ii. p. 811, sp. 121.
Murex adversus, Wood, Ind. Test., p. 139, pl. xxviii. fig. 167.
Cerithium perversum, Lamarck, Anim. s. vert., vol. vii. p. 77, and (ed. Desh.) vol. ix. p. 305, sp. 36.
„ „ Kiener, Iconog., p. 75, sp. 60, pl. xxv. fig. 1.
„ „ Philippi, Enumeratio, vol. i. p. 104, sp. 4, vol. ii. p. 162, sp. 5.
„ „ d'Orbigny, Moll. Canaries, p. 93, No. 144.
Triforis adversa, Lovén, Index Moll. Skandinav., p. 21, No. 156.
Cerithium adversum, v. Middendorff, Malak. Ross., vol. ii. p. 481, sp. 2.
„ „ Forbes and Hanley, Brit. Moll., vol. iii. p. 195, pl. xci. figs. 5, 6.
„ *perversum*, Searles Wood, Crag. Moll., Pal. Soc. 1848, vol. i. p. 72, pl. viii. fig. 8.
„ „ Hörnæs, Foss. Moll. Wien. Beck., vol. i. p. 414, sp. 24.
„ *adversum*, M'Andrew, Distrib. Test. Moll. North Atlantic, p. 31.
Trochus perversus, Hanley, Ipsa Linn. Conch., pp. 324, 529.
Cerithium perversum, Gwyn Jeffreys, Brit. Conch., vol. iv. p. 261, and vol. v. p. 217, pl. lxxx. fig. 5.
Triforis perversa, Weinkauff, Conch. Mittelmeer., vol. ii. p. 167, sp. 1.
„ „ Aradas and Benoit, Conch. Mar. Sicil., p. 240, No. 645.
„ „ Monterosato, Enumerazione, p. 38.
„ „ Seguenza, Formaz. Terz. Calabria, pp. 109, 263, 319, 354.
„ „ Gwyn Jeffreys, Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1885, p. 57, sp. 1.

February 10, 1873. Tenerife, Canaries. 70 fathoms.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Station 122. September 10, 1873. Lat. 9° 5′ S. to 9° 10′ S., long. 34° 50′ W. to 34° 53′ W. 350 fathoms. Red mud.

Habitat.—From Norway (Lovén) to the Mediterranean (Monterosato), the Crimea (v. Middendorff), Madeira (Watson), and the Canaries (M'Andrew).

Fossil.—From the Upper Miocene, over all Europe (Hörnæs), onwards (Seguenza). 0 to 120 feet (Jeffr.)

2. *Triforis levukensis*, Watson (Pl. XXXIX. fig. 4).

Cerithium (*Triforis*) *levukense*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 100, sp. 1.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Shell.—Sinistral, sharply conical, with a narrow and produced base, solid, yellowish white, glossy. *Sculpture:* Longitudinals—there are (on the last whorl) about 20 longitudinal rows of round tubercles, which rows form a small rib across the whorl, and are more or less continuous up the spire; these continue on the base as strongly as on the upper part of the whorls. These rows are parted by shallow rounded depressions. Spirals—the longitudinal rows are cut by narrow little rounded grooves, whose intersection with them forms the tubercles. On the upper whorls there is only one such spiral groove, so that there are only two tubercled spirals, but the groove gradually widens, and there appears in the bottom of it a minute additional spiral, which finally becomes as large as the other two; on the base are three equally divided tubercled spiral threads, of which the inmost is the smallest, and it ceases at the siphonal tube. *Colour:* the apical whorls are amber, the rest of the shell yellowish white, with a narrow amber-coloured thread within the contraction of the base of each whorl; this spiral thread is not continuous, being interrupted by each of the longitudinal rows of tubercles. *Spire* high, sharply conical, with a very slight convexity in its lines of profile, which are not perfectly alike. *Apex* a narrow and perfect cone, ending in a small rounded point. It consists of 6 small rather elongated narrow whorls, of which the first $1\frac{1}{2}$ have about ten rows of minute tubercles faintly connected by spirals; the next $4\frac{1}{2}$ whorls are crossed by about 24 longitudinal sharp little ribs, rising into points at the carina, which is a continuous spiral thread. This carina on the first of these whorls is near the base, but later it rises so as to encircle the upper part of the whorl. The minute spiral rows of tubercles, which alone appear on the first whorl and half, cover the whole surface (both ribs and interstices) on the later apical whorls. The regular sculpture does not begin abruptly and at once, but a tongue of this new sculpture breaks across the top of the whorl, while the lower part retains the earlier ornamentation. *Whorls* 17, of very regular increase, flat on the side; the whole last whorl is contracted and a little elongated; the base is narrow and flat. *Suture* sharply impressed, and broader than the spiral grooves, being marginated on its upper side by a minute flat surface, which runs round the base of the superior whorl. *Mouth* almost more than perpendicular, square, with a largish auricle at its upper corner, and a small and very transverse rift at the pillar. *Outer lip* sharp, thin, straight, perpendicular, angulated at the basal corner, flat across the base, turned in towards the mouth and pinched in at the pillar, where it joins the pillar lip, closing in the side of the small siphonal canal, whose edge is sharp and straight, or a very little contracted all round. *Pillar* straight, then in front very much bent back, so that its posterior line

almost stands on the edge of the base. *Pillar lip* expanded on the base, but with an abruptly defined edge, blunt but projecting on the pillar, where in front it is covered by and cemented to the outer lip. H. 0·22 in. B. 0·07, least 0·06. Penultimate whorl, height 0·032. Mouth, height 0·037, breadth 0·035.

This beautiful little species is very like in general aspect to *Triforis perversa* (Linne); but, apart from other obvious differences, the sculpture of the apex is quite distinct. In that species the extreme apex has about seven spiral scratches, parted by roughened threads, and the following whorls are beset with much closer-set and more numerous riblets, and they have two close-set spirals at the carina; the whole of this sculptured apex, too, is stumpier, and the whorls are not so angulated, and the extreme point is blunter.

Triforis hindsii, Desh. (Bourbon Moll., p. 99), is very near, but is less contracted in front towards the base, has not there near the mouth four rows of pearls, has the pearls white on a brown ground, has not the single amber thread round the base of each whorl, and is a little narrower in proportion.

3. *Triforis bigemma*, Watson (Pl. XLIII. fig. 6).

Cerithium (Triforis) bigemma, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 101, sp. 2.

Triforis bigemma, Dall, Moll. "Blake" Dredgings, Bull. Comp. Zool. Harvard Coll. Cambridge, vol. vi. No. 3, p. 81.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—Yukatan Strait, 640 fathoms (Dall).

Shell.—Sharply conical, high and narrow, solid, opaque, brilliant, yellowish white. *Sculpture:* Longitudinals—the whorls are crossed by rows of tubercles with broad and rounded hollows between; of these longitudinal rows there are 17 to 18 on the last, and about 14 on a great many of the preceding whorls; besides these the surface is sharply, distinctly, and pretty closely scored by minute lines of growth. Spirals—a prominent spiral band encircles the whorls formed by two rows of rounded tubercles, which in each row are connected by a spiral thread; of these threads the lower is rather the larger, sharper, and more prominent. The distance between these threads is very nearly the same as that between the longitudinal rows, so that each group of four adjoining tubercles forms nearly a rhomb. Round the upper part of each whorl is an impressed flat surface, in which, very near the suture, lies another smaller spiral, which becomes minutely tubercled where it crosses the longitudinal rows. At the bottom of each whorl is a very minute spiral thread, which forms a pouting edge to the suture. Besides these the surface is faintly reticulated by microscopic spirals crossing the longitudinal lines of growth. This reticulation is best seen on the flat and glossy base, which is unbroken except by a small sharp spiral, about 0·012 in. within the edge. *Colour* yellowish white, pure white

on the upper part of the spire; round the base of each whorl is a suffused pale tint of brown, which is more or less the colour of the base of the shell; the point of the pillar is white. *Spire* high, narrow, and conical, slightly slewed to the left; so that while the left slope is straight, almost concave, the right slope is just perceptibly convex. *Whorls* probably 22, but of these the three or four apical ones are broken off; they are of very slow increase, flat, constricted on their upper part, flatly prominent in the middle, and contracted at the lower part; the base of the shell is flatly conical. *Suture* strongly defined by the depression in which it lies, but itself linear and projecting, being minutely marginated both above and below. *Mouth* squarely oval, pointed above, and at the front of the pillar by the canal, which is small. *Outer lip* broken. *Pillar* short, small, straight, scarcely excavated or twisted, at the point sharp and slightly advancing outwards. *Inner lip:* a very thin layer of glaze is carried across the body, and turns round the pillar in a few microscopic lines, by which alone it can be traced. H. 0·6 in. B. 0·12. Penultimate whorl, height 0·072. Mouth, height 0·08, breadth 0·06.

This has a good deal the proportions of *Bittium* (*Lovenella*) *metula* (Lovén), with a narrower base. It slightly resembles the *Triforis pfeifferi*, Crosse, and (apparently, for the British Museum tablet has more than one species on it) the *Triforis scitula*, A. Adams, both from South Australia; but these have only one series of gemmules, the upper row being very much smaller, and in both the whole shell is very much smaller and slenderer. *Triforis gigas*, Hinds, is a much thinner and less strongly tubercled and sutured shell. *Triforis angustissima*, Desh. (Moll. de Bourbon), is larger, broader in proportion, has the lower (in his description "supérieure," as he reverses the shell) row of tubercles larger, and lacks the infrasutural flat constriction with its small and finely tubercled spiral. *Triforis aspera*, Jeffr., is a smaller shell, with outlines more straight, smaller tubercles, a less impressed suture, and a more conical base.

4. *Triforis hebes*, Watson (Pl. XLIII. fig. 7).

Cerithium (*Triforis*) *hebes*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 103, sp. 3.

Station 135c. October 17, 1873. Lat. 37° 25′ 30″ S., long. 12° 28′ 30″ W. Nightingale Island, Tristan da Cunha Islands, South Atlantic. 100 to 150 fathoms. Rock, shells.

Shell.—Cylindrically conical, blunt, uncontracted towards the base, strong, translucent, hardly glossy. *Sculpture:* Longitudinals—on the last whorl there are about 20 longitudinal rows of rounded tubercles, parted by depressions of much the same breadth and form as themselves; they run more or less continuously and straight up the spire from whorl to whorl. There are indistinct lines of growth. Spirals—on each whorl the tubercles are arranged in three spiral rows, parted by rather deep but narrow squarish furrows. The highest row is rather smaller and less prominent than the others. The base of each whorl is sharply but not deeply constricted; the edge of this constriction appears on the margin of the base as a rounded thread, defined by a slight furrow, which,

with the exception of microscopic radiating lines of growth, is the only ornament of the flat and very slightly conical base. *Colour* pure somewhat translucent white. *Spire* high and conical, but contracting very little, and hence more cylindrical than usual. *Apex* very blunt, but almost mucronated; this arises from the prominence of the upper of two tumid threads which ornament the three embryonic whorls. Of these threads the lower is the larger, but the upper is at first the more prominent, and at its origin stands up minute, round, and projecting, like a small eccentric blunt spike, reminding one of the mucronated mamillary plug of some of the Cæcums. This embryonic shell is smooth and glossy, but has some faint trace of spiral sculpture. *Whorls* 12, of very gradual increase, flat on the sides, constricted below, flat and hardly conical on the base. *Suture* well defined by the contraction of the whorl above it, and by a minute thread on which it projects. *Mouth* angulately oval, with a small straight canal in front. *Outer lip* broken. *Pillar* perpendicular, straight, short, narrow, pointed. *Inner lip* a thickish porcellanous glaze. H. 0·24 in. B. 0·06. Penultimate whorl, height 0·03. Mouth, height 0·032, breadth 0·02.

This species has some resemblance to *Triforis suturalis*, Adams and Reeve, but is easily distinguished from that by its blunt apex and the less sunken suture. The apical spike faintly recalls the very remarkable tip exhibited by *Stilus insignis*, Jeffr. (Proc. Zool. Soc. Lond., 1885, p. 52, pl. vi. fig. 1). In the figure (7, pl. XLIII.) at the end of this volume, the artist has drawn the apex somewhat too much like a plug. I do not think, however, that it is really a plug, and the form is constant in all the three specimens of the shell which were brought home.

5. *Triforis inflata*, Watson (Pl. XL. fig. 1).

Cerithium (*Triforis*) *inflatum*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 103, sp. 4.

Triforis inflata, Dall, Moll. "Blake" Dredgings, Bull. Comp. Zool. Harvard Coll. Cambridge, vol. vi. No. 3, p. 81.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—Yukatan Strait, 640 fathoms (Dall).

Shell.—Small, narrow, conical, solid, opaque, glossy, with a blunt inflated apex. *Sculpture:* Longitudinals—there are on the last whorl 16 rows of small rounded but not blunt tubercles, whose tips are tilted up the spire. These rows more or less continuously run obliquely down the spire in lines from left to right; the hollows which part them are in form much like themselves; there are also faint microscopic scratches on the lines of growth. Spirals—on each whorl the tubercles are arranged in two spiral rows, parted by a triangular furrow, narrower than the tubercled spirals. Below the under row of tubercles is a broader furrow, in the bottom of which runs the suture on the spireward face of a fine

rounded thread occupying the extreme upper edge of the subjacent whorl. This thread is undulated rather than tubercled where it crosses the longitudinal rows; on the spireward side this thread is defined by a minute deep square-bottomed trench, while on the basal side it lies close in upon the foot of the upper spiral row of tubercles. Round the edge of the base is a slight sharp narrow keel, which the succeeding whorl as it grows buries in the spiral thread mentioned above. At 0·004 from the edge, and there forming a ledge, the whole centre of the base is slightly projected; with this exception, the flat and scarcely conical base has no ornamentation beyond the radiating lines of growth and the microscopic spirals, which, though visible on the rest of the shell, are, as usual, more distinct on the base. *Colour* dull translucent white. *Spire* high, narrow, and conical. *Apex* blunt and inflated. The two embryonic whorls are larger, but otherwise very much like those of *Bittium metula* (Lovén), being turban-shaped and projecting beyond the succeeding whorls; they are glossy and quite smooth, but for some very faint microscopic longitudinal and spiral lines. *Whorls* 13 in all, of very gradual increase, flat on the sides; the base, too, is flat, and very little conical. *Suture* linear, almost hidden by the overlap of the subjacent whorl. *Mouth* very small and square, with a minute, round, very short canal in front, whose edges are reverted all round. *Outer lip* broken. *Pillar* very small, extremely short, straight, but reverted at the point. *Inner lip* not fully formed. H. 0·2 in. B. 0·06. Penultimate whorl, height 0·02. Mouth, height 0·028, breadth 0·025.

This species, which in shape resembles *Triforis suturalis*, Adams and Reeve, may be easily distinguished from that species by the absence of the deep suture, and by the inflated apex. From *Triforis hebes*, Watson, its sculpture and its apex distinguish it at once.

6. *Triforis dolicha*,[1] n. sp. (Pl. XLII. fig. 1).

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, North-east Australia. 28 fathoms. Green mud.

Shell.—Long and narrow, conical, pale, spotted with brown, with three rows of fine tubercles on the later whorls and two on the earlier, a furrowed suture, a small regularly tapering apex, and a square barely produced base. *Sculpture:* Longitudinals—there are on each whorl about 16 riblets, which originate at the upper row of tubercles, and swell down to the lower; they are parted from each other by little shallow pits, and they but feebly and doubtfully run down the spire, being not quite coincident in the adjoining whorls, and being parted by the sutural furrow; near the outer lip the riblets subside into continuous bars, which are prolonged to the base. Spirals—on the last four whorls there are three, on the earlier two, rows of tubercles set upon the longitudinals, and slightly connected in each row by a fine thread; round the angle of the base runs a sharp rounded

[1] δολιχός, long. So called from its narrow form.

thread; at the top of the pillar is another finer; on the pillar itself there are two folds. *Colour* pale brownish, with darker stains. *Spire* high and narrow, conical. *Apex* conical, consisting of five rather sharply angulated and carinated whorls, which are ornamented by minute not quite regular longitudinal bars; the extreme tip is small, rounded, quite smooth, polished, and not very prominent, but rather spread out than immersed. *Whorls:* there are 11½ regular whorls, which are short and of very gradual increase; the edge of the base is bevelled off, but the base itself is flat, with a slight hollowing in the middle. *Suture* furrowed, but in itself invisible, rather oblique. *Mouth* somewhat squarely rounded, small, bluntly pointed above. *Outer lip* is very thin and sharp; has at its insertion a small deep rounded sinus, below which it advances very much into a scoop-like form on the base, and is on the right sharply bent in upon the pillar, the forward edge of which it inwraps. *Pillar* very short indeed; its point is twisted, and very sharply bent to the right, infolding the generic canal. *Inner lip* concave, very short, with a thickened edge; there is a minute nick at its junction, with the outer lip on the pillar. H. 0·184 in. B. 0·048. Mouth, height 0·027, breadth 0·022. Apex, height 0·018, breadth 0·013.

This species is not at all unlike the smaller forms of *Triforis perversa* (Linne), of Europe; but, besides very many minute points of distinction, the base is squarer, with two not three threads, the labral sinus is much deeper, the mouth is rounder, the basal lip more produced, and the pillar tip more bent and elongated; the sutural furrow, too, is deeper, wider, and less oblique, and while the apex is slightly broader, the extreme tip is a very little smaller.

7. *Triforis rufula,*[1] n. sp. (Pl. XLII. fig. 2).

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Off Wednesday Island, Cape York, North-east Australia. 8 fathoms. Coral mud.

Shell.—High, ruddyish, with convexly conical outlines, a slightly convex base, three rows of tubercles on each whorl, a small furrowed suture, and a conical and high apex. *Sculpture:* Longitudinals—there are on the last whorl about 18 (on the earlier whorls fewer) direct riblets, which run down the spire pretty continuously, and cross the base; the parting furrows are wide open and rounded. Spirals—on each whorl there are three very slightly raised square threads, which swell into strongish tubercles as they cross the riblets; they are parted by squarish somewhat narrower furrows; at the angle of the base, barely within its contraction, is a slightly weaker subtubercled thread; another, weaker and undulated rather than tubercled, occupies the middle of the base; round the top of the pillar is another weaker still. *Colour* yellow, more or less ruddy. *Spire* high, very slightly tumid, the lateral outlines being convex. *Apex* has a small blunt rounded tip, is translucent white and conical, and consists of five short convex whorls, on each of which, above the middle, are two fine flat slightly raised threads; their surface is also

[1] So called from its colour.

scored longitudinally with fine regular bars. *Whorls* 8, besides those of the apex; they are flat on the sides, of slow and regular increase, and are parted by a strong sutural furrow; the last whorl is little larger than the penultimate, and has a short rounded base. *Suture* oblique, strongly defined by its furrow, but in itself invisible. *Mouth* oblique, irregularly four-sided, very acute-angled above at the sinus, and below at the canal. *Outer lip* thin and sharp, angulated but not sinuated at its insertion; from this point its edge advances all the way to the base of the shell, at the corner of which it turns in a distinct angle, and across which it is prominent; the lip of the canal does not touch the pillar point, so that the round canal is not closed.[1] *Pillar* short, twisted but very shortly reverted at the point. *Inner lip* well defined, with a slightly thickened edge, concave. H. 0·192 in. B. 0·057. Mouth, height 0·037, breadth 0·027. Apex, height 0·02, breadth 0·014.

This species is in a vague way very like a great many others of the genus, but is distinct from any known to me.

4. *Alaba*, H. and A. Adams, 1858.

Species.

1. *Alaba* (*Diala*) *phasianella*, Angas.
2. *Alaba* (*Diala*) *limnæiformis*, Watson.
3. *Alaba* (*Diala*) *albugo*, n. sp.
4. *Alaba* (*Stiliferina*) *goniochila*, A. Adams.
5. *Alaba* (*Stiliferina*) *striata*, n. sp.
6. *Alaba* (*Stiliferina*) *sulcata*, n. sp.
7. *Alaba* (*Stiliferina*) *fulva*, n. sp.

1. *Alaba* (*Diala*) *phasianella*, Angas.

Alaba phasianella, G. F. Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 113, pl. xiii. fig. 18.
„ „ E. A. Smith, On the genus Alaba, Proc. Zool. Soc. Lond., 1875, p. 538.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Port Jackson.

2. *Alaba* (*Diala*) *limnæiformis*, Watson (Pl. XLI. fig. 7).

Litiopa (?) *limnæiformis*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv, p. 123.

Station 145. December 27, 1873. Lat. 46° 43′ S., long. 38° 4′ 30″ E. Prince Edward Islands, between Cape of Good Hope and Kerguelen. 50 to 150 fathoms. Volcanic sand.

Shell.—Obliquely ovate, thin, smooth, whitish horny, with a slight almost covered umbilical chink. *Sculpture:* there are many faint oblique lines of growth, but none other

[1] Since the above description was written the lip-edge in the single perfect specimen has been chipped by an accident.

of any kind. *Colour* whitish horny. *Spire* conical, slightly scalar. *Apex* small, but bluntly rounded, and neither sharp nor sculptured. *Whorls* $3\frac{1}{2}$, of regular but rather rapid increase, a little tumid, and convex but flattened, in a line parallel to the axis; the base is tumid and somewhat produced. *Suture* strong, impressed, and almost a little canaliculate. *Mouth* perpendicular, oval, not at all pointed. *Outer lip* thin, a little incurved above, slightly patulous in front, and projecting beyond the pillar, between which projection and the pillar it retreats as a slight and open sinus. *Pillar* perpendicular, a little hollowed, twisted, and truncate. *Inner lip* spread out over the body-whorl and behind the pillar, so as to conceal and almost close the umbilicus, below which it crosses with an oblique thin edge to join the front of the pillar below its twisted truncation. *Umbilicus* not small in itself, but almost quite hidden. H. 0·089 in. B. 0·06, least 0·047. Penultimate whorl, height 0·02. Mouth, height 0·052, breadth 0·039.

This is one of those unsatisfactory cases where a species is classed under a particular genus for want of a better. The texture of the shell is somewhat like that of *Litiopa*, but it utterly wants the pointed and sculptured apex, the truncation of the lip is blunt, and the species much more resembles a *Limnæa* than anything else.

There are no varices nor any thickening of the outer lip to connect it with *Alaba* (see Adams' Genera, vol. i. p. 241, and Ann. and Mag., 1862, vol. x. p. 294; and E. A. Smith, Proc. Zool. Soc. Lond., 1875, p. 537), and the truncated column distinguishes it from *Diala*. But, of course, if *Alaba* (*Diala*) *picta*, Ad., with a faint approach to a truncation, may be admitted to the subgenus, whose characteristic features already at each important point contradict those of the genus itself, it is hard to say what may or may not be united to so elastic a group, and I really know of nowhere else to put it.

3. *Alaba* (*Diala*) *albugo*, n. sp. (Pl. XLII. fig. 3).

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Off Wednesday Island, Cape York, North-east Australia. 8 fathoms. Coral mud.

Shell.—Strong, elongate, conical, blunt-tipped, fulvous, white-spotted,[1] very faintly subscalar, spirally striated, with a largish body-whorl, oval mouth, and sharply impressed suture. *Sculpture:* Longitudinals—there are very faint rather straight lines of growth. Spirals—there are on the last whorl above the periphery about seven small broadish flat unequal bands, which are parted by very small shallow white rugged furrows; the band at the edge of the base where the periphery occurs is slightly stronger and is more round than the rest, and forms a slight keel; very similar sculpture is reproduced on the base, but a little flat space encircles the pillar. *Colour* bright yellow-brown, scored with white spiral lines and dotted with round white spots, arranged in blurred groups, forming broad

[1] Hence the name.

longitudinal lines; and alternating with these, in the brown intervals there are more separate spots singly dotted down but crowding more closely (so as to form a continuous white girdle) round the top of the whorls and at the periphery; the shell is translucent, and the surface is glossy. *Apex* narrowly pointed, but blunt at the tip, which consists of two subtabulated whorls. *Spire* high, conical. *Whorls* 6, exclusive of the tabulated apex; they are barely convex, a little high, and the last is large with a produced straightly conical base. *Suture* rather sharply impressed. *Mouth* pointedly and gibbously oval. *Outer lip* sharp and thin, with a perfectly flat front edge; it runs rather straight from its insertion to the periphery, where it is subangulated; thence it is slightly and advancingly curved across the base. *Inner lip* quite discontinuous across the body, where it is pretty straight; it is concave at the pillar, where it is flat and patulous with a thin edge; the junction with the base is angulated, but scarcely truncated. H. 0·13 in. B. 0·05. Mouth, height 0·044, breadth 0·03.

The whole aspect of this species is suggestive of a *Rissoa*, but the want of continuity in the lips, and the slight truncation of the base, exclude it from that genus.

4. *Alaba* (*Stiliferina*) *goniochila*, A. Adams (Pl. XLII. fig. 4).

Alaba (*Stiliferina*) *goniochila*, A. Adams, Ann. and Mag. (3d ser.), 1860, vol. vi. p. 335, and 1862, vol. x. p. 299.

Stiliferina goniochila, Dunker, Index Moll. Mar. Japon., p. 116.

September 8, 1874. Flinders Passage, Cape York, North Australia. 7 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Cape York. 6 fathoms. Coral mud.

July 1875. Reefs off Honolulu, Sandwich Islands. 40 fathoms.

Habitat.—Japan (A. Adams).

5. *Alaba* (*Stiliferina*) *striata*, n. sp. (Pl. XLII. fig. 6).

July 29, 1874. Levuka, Fiji. 12 fathoms.

September 28, 1875. Tahiti Harbour. 20 fathoms.

Shell.—Ovate, conical, white, ribbed and spirally striated, with a tumid body, short convex whorls and base, an impressed suture, a small short cylindrical style, and an oval mouth. *Sculpture:* Longitudinals—there are on each whorl 20 to 25 small rounded riblets, which arise at the suture and on the last whorl die out at or just below the peri-

phery; on the earlier whorls they extend from suture to suture; they are parted by open, round, shallow, rather broader furrows. Spirals—the whole surface is covered with round threads and similar furrows; of these there are about eight on the penultimate whorl. *Colour* pure white, only the apical style has a tinge of ruddiness. *Apex:* the style is nearly cylindrical, and consists of three very small, short, smooth whorls, of which the middle one at its origin projects slightly beyond the next. *Spire* rather high, with conical but slightly convex profile lines. *Whorls* 5, besides those of the apex; they are rather short and broad, convex, with a very slight angulation in the middle. *Suture* angularly impressed and strong. *Mouth* a perfect oval, with the faintest possible gutter at the pillar point. *Outer lip* thin, arched, with a very slight flattening of the curve; it is patulous on the base, especially near the pillar point. *Inner lip* concave, with a slightly straightened but oblique line on the pillar, whose edge is sharp and short, being obliquely cut off before it reaches the base. H. 0·09 in. B. 0·049. Mouth, height 0·033, breadth 0·028.

This shell is a good deal like a delicate *Rissoa*, but the form of the inner lip and pillar, and the style-like apex, connect it with the Stiliferinas.

6. *Alaba* (*Stiliferina*) *sulcata*, n. sp. (Pl. XLII. fig. 7).

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Off Cape York, North-east Australia. 6 fathoms. Coral mud.

Shell.—Ovate, pointed at either end, white, spirally striated on the base, with a tumid body, short rounded whorls, a produced and furrowed base, a conical spire, a small but scarcely style-bearing apex, and an ovate subfusiform mouth. *Sculpture:* Longitudinals—there are many small faint rounded convolutions of the surface; towards the outer lip some very fine, narrow, feebly raised, rounded riblets begin to appear. Spirals—round the top of the last whorl, close up to the suture, runs a very narrow shallow furrow: the middle of the whorl is smooth; round the bottom of the penultimate whorl one or two very faint spirals may be detected; just at the periphery, where the insertion of the outer lip occurs, a series begins of five or six shallow little furrows,[1] with barely rounded and broader threads between them; they rather increase in distinctness for about half way across the base and then cease, the middle round the pillar being smooth. *Colour* hyaline. *Apex:* there is hardly a style, but the first whorl and a half stand up a very little; the extreme tip is small and dome-shaped. *Spire* conical, short. *Whorls* 5; the upper ones are small and rounded, the last is a little flattened on the side slopes, has a very feeble subangulation at the periphery and a rounded base, produced by the pillar into a rather long and small point. *Suture* impressed, horizontal. *Mouth* ovate, but run out

[1] It is from this feature that the name is taken.

to a sharp point above, and at the front of the pillar. *Outer lip* thin and sharp, continuously and evenly arched throughout. *Inner lip* short and barely convex across the body, openly concave at the base of the pillar, which on the left is rounded and twisted with a minute umbilical furrow in the middle behind the sharp small slightly reverted pillar lip, which, as well as the pillar itself, are fined off to a sharp point short of the extremity of the shell. H. 0·07 in. B. 0·044. Penultimate whorl, height 0·013. Mouth, height 0·039, breadth 0·023.

In the solitary specimen of this species the outer lip is a little broken, which gives the appearance of a canal, but the lines of growth show that this appearance is deceptive. At the same time I do not feel at all certain that this is a *Stiliferina*; it may be only a young shell of some other genus, but the whole group would need more study than it has yet received, and I greatly doubt whether the genus or subgenus has, even after the changes it has already undergone, found its true place in classification.

7. *Alaba* (*Stiliferina?*) *fulva*, n. sp. (Pl. XLII. fig. 5).

September 7, 1874. Off Cape York, Torres Strait. 3 to 4 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Off Wednesday Island, near Cape York. 8 fathoms. Coral mud.

Shell.—Strong, elongate, curvedly conical, mucronate, fulvous,[1] ribbed and spirally striate, with oval mouth, longish body-whorl, and impressed suture. *Sculpture:* Longitudinals—there are on each whorl from 18 to 20 small, feeble, rounded riblets, parted by shallow and broader furrows; on the upper whorls these extend from suture to suture, on the last whorl they die out on the base; they do not appear on the first two normal whorls below the style. Spirals—on the penultimate whorl there are eight slightly rounded threads, of which the third and sixth are very slightly stronger than the rest; on the base there are about four more, of which the last closely entwines the pillar; the parting furrows are of about the same breadth and strength as the threads. *Colour* dark yellow. *Apex* consists of two turbinated smooth whorls, of which the second is rather broader than the first regular whorl. *Spire* high and conical, with convex profile lines. *Whorls* 10 (exclusive of the style), convex, short, and broad, only the last being a little elongated, with a rounded base. *Suture* strong, coarse, impressed and almost horizontal. *Mouth* oval, pointed above; the whole base at the front of the mouth is very obliquely cut off backwards. *Outer lip* sharp and thin, very regularly curved all round; it is cut off backwards across the whole base. *Inner lip* concave throughout, thin, appressed, very obliquely cut off in front, but not so as to produce a truncated point to the pillar; there is across the body a faint trace of a layer of shell connecting the outer and inner lips. H. 0·13 in. B. 0·045. Mouth, height 0·033, breadth 0·024.

[1] Whence the name.

The form of the apex, though hardly stiliform, is unlike that of *Rissoa*, from which genus too the truncation of the base and the want of connection between the outer and inner lips remove this species. I do not know whether Mr Adams would have consented to its admission to the subgenus in which I have put it, but in regard to *Stiliferina* the difficulty which attaches to several of Mr Adams' groups is increased by the fact that, having removed it from the genus *Stilifer*, under which and amidst all the relationships of which he originally placed it, he afforded no further indication whatever as to the texture or general sculpture of the shells that might be associated with it in its new relationship as a subdivision of *Alaba*. That whole group too, loosely defined, has been reconstructed and amended by Mr E. A. Smith (Proc. Zool. Soc. Lond., 1875, p. 537), and in this general removal of the foundations, it is hardly possible to say where *Stiliferina* now stands. I think, however, it may embrace this species.

5. *Litiopa*, Rang, 1829.

Litiopa melanostoma, Rang.

Litiopa melanostoma, Rang, Man. Hist. Moll., p. 129.
" " Rang, Ann. Sci. Nat., 1829, vol. xvi. (1st ser.), p. 303.
" *striata*, Pfeiffer in Wiegmann's Archiv., 1840, vol. i. p. 255.
" *melanostoma*, Eydoux and Souleyet, Voy. "Bonite," Zool., vol. ii. p. 584, pl. xxxvii. figs. 1–6.
Buccinum litiopa, Mrs Gray's Moll., vol. i. pl. xxiv. figs. 1, 2; vol. ii. pl. cvii.a, fig. 3.
Litiopa bombyx and *Litiopa melastoma* (*sic*), Gray, System. Arrang., p. 70.
" *bombix*, Gray, List of Genera, p. 155.
" *maculata*, d'Orbigny, Cuba Moll., vol. ii. p. 149, No. 333.
" *divisa*, Carpenter, Proc. Zool. Soc. Lond., 1855, p. 234, No. 21.
" *bombyx* and *Litiopa melastoma* (*sic*), Gray, Guide to Moll., pt. i. p. 96.
" *melanostoma* and *Litiopa bombyx*, Adams, Genera, vol. i. p. 324, pl. xxxiv. fig. 5.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

June 20, 1873. West of Azores. Surface.

Habitat.—A species of universal distribution in warm seas, on floating seaweed, and specially abundant in the Sargasso Sea.

From careful examination of the type shells, I entirely agree with the notes entered on the back of the tablets in the British Museum, bearing *Litiopa divisa*, Carp., and *Litiopa striata*, Pfr., that these are this species. Dr Dunker, in his Addenda (p. 64) to his work on Dr Tam's Collection of Shells from the Guinea Coast, mentions that *Litiopa carinata* and *Litiopa striata*, both of Pfeiffer, are the same as the *Litiopa nitidula*, Pfr., which last, both from his figure and the fact that it is found "in Sargasso natante frequentissima," one could hardly fail to suspect was the same as *Litiopa melanostoma*. This is also, no doubt, the species referred to by my lamented friend Captain Knocker, R.N. (in the Proc. Zool. Soc. Lond., 1868, p. 617, &c.), as *Litiopa bombyx* (probably *Litiopa bombex*, Kiener, Ann. Sc. Nat., vol. xxx. p. 121, but he gives no name of author). He mentions having found it abundant on the Sargasso weed.

6. *Planaxis*, Lamarck, 1822.

Planaxis sulcata (Born).

Chemnitz, Conch. Cab., vol. iv. p. 44, pl. cxxiv. figs. 1170, 1171.
Buccinum sulcatum, Born, Mus. Vindob., p. 258, pl. x. figs. 5, 6.
„ „ Bruguière, Encycl. méthod., vers, vol. i. p. 255, fig. 16.
„ „ Dillwyn, Catalogue, vol. ii. p. 614, sp. 63.
„ „ Wood, Ind. Test., p. 114, pl. xxv. fig. 64.
Planaxis sulcata, Lamarck, Anim. s. vert., vol. vii. p. 51, and (ed. Desh.) vol. ix. p. 236, sp. 1.
„ *undulata*, Lamarck, Anim. s. vert., vol. vii. p. 51, and (ed. Desh.) vol. ix. p. 236, sp. 2.
„ *sulcatus*, Sowerby, Genera, vol. ii. pl. ccviii. fig. 1.
„ „ Blainville, Manuel, vol. i. p. 405, vol. ii. pl. xvi. fig. 4.
„ „ Quoy and Gaimard, "Astrolabe," Zool., vol. ii. p. 468, pl. xxxiii. figs. 25–29.
„ *buccinoïdes*, Deshayes, Dict. Class., art. *Planaxe*, and in Lamarck's Anim. s. vert. (2d ed.), vol. ix. p. 237, sp. 4.
„ *pyramidalis*, Krauss, Südafrik. Moll., p. 103, sp. 1.
„ *sulcatus*, Reeve, Conch. Icon., vol. xx. pl. i. fig. 4.
„ *sulcata*, Deshayes, Moll. Réunion, p. 64, No. 187.
„ *pyramidalis*, v. Martens, Moll. Mauritius, &c., p. 283.
„ *sulcatus*, E. A. Smith, List of Planaxis, Ann. and Mag. Nat. Hist. (4th ser.), 1872, vol. ix. p. 37, sp. 1.
„ „ Sowerby, Thes. Conch., pts. 41, 42, p. 171, sp. 1, pl. cccclxxxiii. (*Gen.* i.) figs. 10, 11.

July 24, 1874. Matuka, Fiji. Beach.

Habitat.—South-east Africa (Krauss); the Indian Ocean, Australia, and the Philippines (E. A. Smith).

Mr Hanley (Wood, *loc. cit. supra*) denies that *Planaxis sulcata*, Lam., is really *Buccinum sulcatum*, Born, and this is the view maintained by Deshayes (Anim. s. vert., vol. ix. p. 237), who proposes *Planaxis buccinoïdes* for Born's species.

Mr E. A. Smith (whom I have followed) says (*loc. cit. supra*) that *Planaxis sulcata*, Lam., is an elongate variety, and *Buccinum pyramidale*, Gmel. = *Planaxis undulata*, Lam., is a shorter variety.

Family Litorinidæ, Gray, 1840.

Genera. 1. *Litorina*, Férussac. 2. *Echinella*, Swainson. 3. *Cithna*, A. Adams. 4. *Fossarus*, Gray. 5. *Iphitus*, Jeffreys.

1. *Litorina*, Férussac, 1821.

Species.

1. *Litorina cincta*, Quoy and Gaimard.
2. *Litorina mauritiana*, Lam.
3. *Litorina peruviana*, Lam.
4. *Litorina pintado*, Wood.
5. *Litorina setosa*, E. A. Smith.
6. *Litorina striata*, King.
7. *Litorina* (*Hamus*) *montrouzieri*, Fischer.
8. *Litorina* (*Hamus*) *granularis*, Gray.
9. *Litorina* (*Hamus*) *nodulosa*, d'Orb.

1. *Litorina cincta*, Quoy and Gaimard.

Litorina cincta, Quoy and Gaimard, "Astrolabe" Zool., vol. ii. p. 481, pl. xxxiii. figs. 20–21.
„ „ Lamarck, Anim. s. vert. (ed. Desh.) vol. ix. p. 209, sp. 10.
„ „ Philippi, Abb. und Besch., vol. ii. p. 202, sp. 18, pl. xl. (*Gen.* iv.) fig. 18.
„ „ Reeve, Conch. Icon., vol. yiii. pl. xi. fig. 53.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 76, sp. 82, pl. x. figs. 5, 8.
„ „ Hutton, Manual, p. 78.

June 26, 1874. D'Urville Island, New Zealand. Beach.

Habitat.—New Zealand (Hutton).

2. *Litorina mauritiana* (Lamarck).

Phasianella mauritiana, Lamarck, Anim. s. vert., vol. vii. p. 51, and (ed. Desh.), vol. ix. p. 244, No. 9.
„ „ Delessert, Recüeil, pl. xxxvii. fig. 14.
Litorina unifasciata, Gray in King's Survey of Australia, App., p. 483.
„ „ Philippi, Abb. und Besch., vol. ii. p. 164, pl. xxxiv. (*Gen.* iii.), figs. 15, 17 (not 16),
„ „ Reeve, Conch. Icon., vol. x. pl. xvii. fig. 100.
„ *lævis* (not Philippi), Reeve, Conch. Icon., vol. x. pl. xvii. fig. 95.
„ *africana* (not Philippi), Reeve, Conch. Icon., vol. x. pl. viii. fig. 37.
„ *unifusciata*, Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 172, No. 101.
„ „ Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 209, No. 139.
„ „ v. Martens, Moll. Mauritius, &c., p. 284.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 97, sp. 111, pl. xiv. fig. 4.
„ „ E. A. Smith, "Alert" Collections, p. 60, No. 62.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

Habitat.—Mauritius (Lamarck); New Holland (Gray); Australia, from Sydney to Swan River (Angas); also Ceylon, Nicobars, Malay Archipelago (v. Martens).

I have not quoted here Deshayes (Moll. de Réunion, p. 64, No. 184, *Litorina lævis*, Phil.), because he has not quite concluded that Philippi's species, which certainly is found at Réunion, is the same as Lamarck's. Mr E. A. Smith, whom I have followed, holds them as "quite distinct."

3. *Litorina peruviana* (Lamarck).

Phasianella peruviana, Lamarck, Anim. s. vert., vol. vii. p. 53, and (ed. Desh.) vol. ix. p. 243, sp. 5.
Turbo zebra, Wood, Ind. Test. Supp., p. 224, pl. vi. fig. 33.
Litorina zebra, Gray, Zool. Beechey's Voy., p. 138, pl. xxxvi. fig. 8.
Phasianella peruviana, Delessert, Recueil, pl. xxxvii. fig. 9.
Litorina zebra, Philippi, Abb. und Besch., vol. ii. p. 165, sp. 15, pl. iii. fig. 16.
„ *peruviana*, Reeve, Conch. Icon., vol. x. pl. xii. fig. 61.
„ „ d'Orbigny, Voy. Amériq. Mérid., vol. v. p. 393, No. 286, pl. liii. figs. 5–7.
„ *zebra*, Küster, Conch. Cab. (ed. Küster), p. 18, pl. ii. figs. 25–27.

November 18, 1875. Valparaiso. Shore.

Habitat.—Peru (Lamarck); Chili (d'Orbigny).

Lamarck published his name for this species in 1822. Wood's most descriptive name was published, not in the original Index, but in the Supplement of 1828. Philippi (*loc. cit. supra*) overlooked this fact, and attributed to Wood's name the priority due to the original work (1818), and Küster unfortunately followed Philippi without further inquiry, and Wood's name is therefore that under which the species is most generally known.

4. *Litorina pintado* (Wood).

Turbo pintado, Wood, Ind. Test. Supp., p. 224, pl. vi. fig. 34.
Litorina seriale, Eydoux and Souleyet, "Bonite" (Brit. Mus. ed. No. 148), vol. ii. p. 558, pl. xxxi. figs. 34–36.
" " Philippi, Abb. und Besch., vol. ii. p. 203, pl. xl. (*Gen.* iv.) fig. 20.
" " Reeve, Conch. Icon., vol. x. pl. xi. fig. 54.
" " Deshayes, Moll. Réunion, p. 164, No. 185.
" " Weinkauff, Conch. Cab. (ed. Küster), p. 62, pl. viii. figs. 6, 7.
" " v. Martens, Moll. Mauritius, &c., p. 284.

August 17, 1875. Hilo, Sandwich Islands. Shore.

Habitat.—Sandwich Islands (Wood); Indian Ocean and Polynesia (v. Martens).

5. *Litorina setosa*, E. A. Smith.

Litorina setosa, E. A. Smith, Ann. and Mag. Nat. Hist. (4th ser.), 1875, vol. xvi. p. 69.
" " E. A. Smith, Transit of Venus Exped. Phil. Trans., vol. 168, 1879 (separate impression), p. 6, pl. ix. fig. 6.

Station 149c. January 19, 1874. Lat. 49° 32′ S., long. 70° E. Balfour Bay, Royal Sound, Kerguelen. 60 fathoms. Volcanic mud.

Habitat.—Kerguelen (E. A. Smith).

6. *Litorina striata*, King.

Litorina striata, King, Zool. Journ., 1831, vol. v. p. 345, No. 51.
" *canariensis*, d'Orbigny, Moll. Canaries, p. 78, pl. vi. figs. 8–10.
" *affinis*, d'Orbigny, Moll. Canaries, p. 79, pl. vi. figs. 11–13.
" *striata*, Philippi, Abb. und Besch., vol. ii. p. 199, sp. 12, pl. xl. (*Gen.* iv.) fig. 9.
" *granosa*, Philippi, Abb. und Besch., vol. iii. p. 65, sp. 12, pl. xv. (*Gen.* vii.) fig. 14.
" *striata*, Reeve, Conch. Icon., vol. x. pl. viii. fig. 40.
" " and *Litorina affinis*, McAndrew, Distrib. Test. Moll., pp. 31, 40.
" " Dunker, Moll. Guineæ, p. 10, No. 27, pl. ii. figs. 49–51.
" *affinis*, Dunker, Moll. Guineæ, p. 11, No. 28, pl. ii. figs. 28, 29.
" *striata*, Gwyn Jeffreys, Moll. St Helena, Ann. and Mag. Nat. Hist. (4th ser.), 1872, vol. ix. p. 264.
" " Weinkauff, Conch. Cab. (ed. Küster), p. 50, sp. 48, pl. vi. figs. 9, 12.

February 1873. Santa Cruz, Tenerife. Shore.

Habitat.—Azores (King); Madeira (Watson); Canaries (McAndrew); West Africa (Dunker); St. Helena (Gwyn Jeffreys).

The *Litorina affinis*, d'Orb., is the young shell of this species. The earlier whorls are always more or less nodulous, and even in the full-grown shell one often finds traces of tubercles supplying links between the nodose and the smooth forms; while at the same time the action of the surf often effaces the tubercles which had actually existed on the upper whorls. Facts of this sort are palpable to a collector who gathers on the beach, and knows the mollusks in the conditions of their actual life, but are apt to escape a museum systematist, who despises young and poor specimens, and "pitches away," as the phrase goes, inconvenient and troublesome forms, which for real study are the most valuable of all. The classification of these tubercled forms under *Hamus* as distinct species, is an indication of the worthlessness of such subdivisions.

7. *Litorina* (*Hamus*) *montrouzieri* (Fischer).

Tectaria montrouzieri, Fischer, Journ. de conch., vol. xxvi. (1878) p. 212; vol. xxvii. (1879) p. 31, pl. iii. fig. 6.

Litorina (*Tectaria*) *montrouzieri*, Weinkauff, Conch. Cab. (ed. Küster), p. 102, No. 118, pl. xiv. figs. 14, 15.

September 8, 1874. Flinders Passage, Cape York, North Australia. 7 fathoms.

Habitat.—New Caledonia (Fischer).

Is this species really distinct from *Litorina papillosa*, Lam.? It is thinner, the whorls overhang the suture more, and the base is not tubercled; but that species is so variable that these, doubtful specific features in the whole genus, are more than usually questionable here.

8. *Litorina* (*Hamus*) *granularis*, Gray.

Litorina granularis, Gray, Zool. Beechey's Voy., p. 140.
" " Philippi, Abb. und Besch., vol. iii. p. 63, sp. 5, pl. xv. (*Gen.* vii.) fig. 7.
" " Reeve, Conch. Icon., vol. x. pl. xiii. fig. 68.
" *nodosa* (not of Gray), Reeve, Conch. Icon., vol. x. pl. ii. fig. 13.
" *exigua*, Dunker, Malak. Blätter, vol. vi. p. 226.
" " Dunker, Moll. Jap., p. 13, pl. ii. fig. 3.
" " Lischke, Jap. Meeresconch., vol. ii. p. 70
" " Weinkauff, Conch. Cab. (ed. Küster), p. 95, pl. xiii. figs. 13, 16.
" " Dunker, Index Moll. Mar Japon., p. 111.

May 14, 1875. Oosima, Japan.

Habitat.—? (Gray); New Zealand (Philippi).

I have no doubt that the Challenger specimens belong to this species of Gray. Having that conviction, I feel that I have the authority of Lischke for quoting *Litorina exigua*, Dunker, as a synonym, a fact which Lischke himself denied; for, while identifying *Litorina exigua*, Dunker, with *Litorina granularis*, Reeve, he denied that Reeve's species was that of Gray or of Philippi (*loc. cit. supra*). His reason for this opinion is that in some points the descriptions do not tally: notably, that Gray gives for the size seven lines instead of seven millimetres; but chiefly, and

above all, he mentions the fact that Gray gives no locality for his species. Had Gray stated that it came from Japan, Lischke would probably have felt his other difficulties vanish. I need hardly discuss minutely Weinkauff's somewhat confused note (*loc. cit. supra*). He seems to find Philippi (Abb. und Besch., *loc. cit.*) not quite satisfactory, and for that reason suppresses the species of Gray (!).

In regard to Gray's species, which I had examined in the British Museum, I wrote to Mr E. A. Smith, who is always as obliging as he is accurate. My object was to learn whether the shells in the British Museum are the type of the species. Mr Smith replies :—"We have Gray's type of *Litorina granularis*. It is in his own private collection, which he gave to the museum. Reeve has figured a youngish specimen, Conch. Icon., fig. 68 a, b." He then goes on to say that it is the adult of this species which Reeve has figured as *Litorina nodosa*, fig. 13 (the true *Litorina nodosa*, Gray, being quite different; see Philippi, Abb. und Besch., vol. ii. p. 160, pl. xxxiii. of the volume, iii. of the genus, figs. 6, 7), and adds that Philippi (vol. iii. p. 63, pl. xv. of the volume, vii. of the genus, fig. 7) gives a figure (not a good one) of the true *Litorina granularis*, Gray.

9. *Litorina* (*Hamus*) *nodulosa*, d'Orbigny.

Chemnitz, Conch. Cab., vol. v. p. 42, pl. clxiii. fig. 1546 (not 1545).
Litorina nodulosa, d'Orbigny, Moll. Cuba, vol. i. p. 205, pl. xiv. figs. 11–14.

September 1, 1873. St Michael's Rocks, Fernando-Noronha. Shore.

Habitat.—West Indies (d'Orbigny).

I have adhered simply to the name as given in the British Museum to the species with which the Challenger specimens agree. The only difference these offer is that the basal spirals have a feeble tendency to become tuberculated beyond what I could find in the British Museum shells, but this is always a variable feature in the nodulous Litorinas, and the figure in d'Orbigny exhibits a tubercled base, though he does not refer in the text to this characteristic. In order to escape the confusion which surrounds this species, and which seems only to be increased by each fresh attempt to clear it up, I have not quoted other authorities above, but subjoin here such as I suppose to refer to this species. In quoting the Conch. Cab. above, I have excluded fig. 1545, because it is obvious that Chemnitz united two species; one obtained "durch die Cookischen Seereisen aus den Südländern," and another "die kleinere," which, he says, is frequent in the West Indies. Between the figures size will not serve to distinguish, for they are equal in this respect, but of the two fig. 1546 is a very fair representation of the West Indian species of d'Orbigny. Dillwyn (vol. ii. p. 826, No. 26, *Turbo trochiformis*), refers apparently to Captain Cook's species, for he attributes it to the Southern Ocean. Gmelin (p. 3582, No. 98) had seemingly done the same. Wood (Ind. Test., p. 150, pl. xxx. fig. 25, *Turbo trochiformis*) intended, I suppose, his figure to represent the West Indian species, as that is the habitat he assigns it. What species Deshayes had before him I am not able to say (see Lamarck, Anim. s. vert., ed. Desh., vol. ix. p. 205, No. 4, *Litorina nodulosa*, Desh.), most probably the West Indian. Philippi (Abb. und Besch., vol. ii. p. 143, pl. ii. [of the genus, but pl. xxviii. of the vol.] figs. 12, 14, 15, *Litorina trochiformis*, Dill.) certainly represents the West Indian species of d'Orbigny. Further, a note on the back of one of the British Museum tablets expresses what is, I think, a pretty general opinion, viz., that the *Litorina dilatata*, d'Orb. (Moll. Cuba, vol. i. p. 207, pl. xiv. figs. 20–23, Philippi, Abb., &c., vol. ii. p. 145, pl. xxviii. [or *Gen.* pl. ii.] fig. 13), is also this

species. Weinkauff (Conch. Cab., ed. Küster, p. 45, pl. v. figs. 9, 11) refers, I suppose, to this species, under the name of *Litorina* (*Tectarius*) *thiarella*, Anton, though his description is vague,[1] and his figure might represent anything.

2. *Echinella*, Swainson, 1840.

Echinella (?) *tectiformis*, Watson (Pl. XLIII. fig. 1).

Echinella (?) *tectiformis*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 95.

Station 235. June 4, 1875. Lat. 34° 7′ N., long. 138° E. Japan. Bottom temperature 38°.1 F. 565 fathoms. Green mud.

Shell.—High, conical, tectiform, carinated, umbilicated, with a flattish depressedly conical base. *Sculpture:* there are many sinuous, rather remote, longitudinal puckerings, minute below the suture, then evanescent, but on the whole lower half of the whorls rising into rarer, narrow, sharply rounded riblets, separated by flat intervals of fully twice their width; on the carina they rise into sharpish little longitudinal tubercles; below this they rapidly and almost wholly disappear, showing on the base only as slight undulations marking the very curved lines of growth. Besides these there are minute round threads which fret the whole surface. Spirals—the base of each whorl is thrown out into a narrow sharp expressed carina, which is rendered more prominent both by the longitudinal tubercles and by the imbrication of the whorls, which project markedly above the suture; the whole surface of the shell is, moreover, covered with fine unequal rounded threads, which are coarser in proportion to the development of the longitudinal puckerings, and which are crisply crimped by the finer longitudinals. On the base a slight swelling runs round near the outer edge. *Colour* a dead, faintly yellowish, chalky white, but which is not altogether without polish. *Spire* very high and narrow. *Apex* broken. *Whorls:* only four remain, of very regular increase; flatly and very straightly sloping down from the deep suture to the carina, below which they are sharply constricted; each whorl is thus imbricated over the one which succeeds it. *Suture* squarely angulated and deeply impressed. *Mouth* squarely rounded, rather small. *Outer lip* thin. *Pillar lip* broadly reflected over the umbilicus. *Umbilicus* small but deep, with a narrow swollen edge. H. 0·9 in (?). B. 0·65, least 0·58. Penultimate whorl, height 0·2. Mouth, height 0·25, breadth 0·25.

The only specimen of this species is badly broken, so that the measurements, that of height in particular, are somewhat imaginary. It is so remarkable a form, however, that it is well worth preservation and description. In the absence of apex, operculum, and animal, its generic place is somewhat doubtful. The texture of the shell rather suggests a *Solarium*, but its extraordinarily high and narrow form, its almost poriform umbilicus, and the character of its sculpture point more to *Echinella*. In shape it resembles *Helix schrammi*, Fischer (Journ. de conch., 1858, p. 184, pl. vii. fig. 8), more than anything else I know.

[1] Weinkauff says the "Embryonalende" is "ungeziert, glänzendglatt." Where unrubbed the surface shows spiral threads, of which the highest is tubercled, and these arise almost, if not quite, at the very top.

3. *Cithna*, A. Adams, 1863.

This genus was proposed by A. Adams (Proc. Zool. Soc. Lond., 1863, p. 113), as a subgenus of *Conradia*, regarded by him as one of his family Fossaridæ. Its characteristics do not stand out very clearly, for he defines the subgenus as "umbilico carina semilunari extus instructo," but he adds explanatorily that "it resembles *Conradia*, without any ridges or keels on the whorls." Then he describes *Cithna globosa* as "umbilico extus valde carinato," and regarding *Cithna spirata* besides its umbilicus "carina conspicua circumcincto," he says that it has whorls "superne angulatis ultimo ad peripheriam carina transversa instructo," so that there is here a species with three keels, although as a *Cithnâ* it should have had none.

Dr Gwyn Jeffreys ("Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1883, p. 110) has removed this subgenus from its connection with *Conradia*, and put it as a genus (unfortunately without fresh definition) next to *Lacuna*, from which he says "it differs in being destitute of an epidermis, and in having, instead of a flattened and channelled pillar, an obliquely curved umbilical chink, which ends in a small but deep perforation, and is enclosed by a more or less sharp and distinct ridge. The tentacles of the animal are ciliated, as in *Trochus* and *Rissoa*, which is not the case in *Lacuna*."

With few exceptions, and these of a peculiar and limited character, there are probably no shells wholly destitute of epidermis, however caducous that integument may be; it would, therefore, be very interesting to prosecute observations on this point regarding *Cithna*. In his generic diagnosis of *Lacuna* (Brit. Conch., vol. iii. p. 343) Dr Jeffreys does not mention the epidermis.

In the umbilical groove there is a minute difference between *Lacuna* and *Cithna*. In the former a careful examination shows that the furrow (and the axial perforation where it exists), run strictly within the labial edge; in *Cithna*, on the other hand, the groove is external to the lip, and is a true part of the umbilicus. This feature is very distinct in *Lacuna divaricata* (Fabr.), while in *Lacuna pallidula* (Da Costa), it is more doubtfully recognisable. I am not aware what relation this feature of the inner lip and umbilicus has to the economy of the animal's life, but it would seem to be one of some importance, possibly in connection with the eggs, and in that case it is deserving of generic recognition.

The observation of the ciliated tentacles we owe to Dr Jeffreys. Forbes and Hanley (Brit. Moll., vol. iii. p. 66) quote Dr Johnston as saying that *Lacuna vincta* (Mont.) (= *divaricata*, Fabr.), has its "tentacula setaceous," but it would appear that he only meant by setaceous shaped like a bristle, not ciliated, as one might have supposed. It is unfortunate that in the Brit. Conch., vol. iii. pl. viii. fig. 2, the artist has represented *Lacuna* with ciliated tentacles.

Species.

1. *Cithna tenella*, Jeffr. 2. *Cithna margaritifera*, Wats.

1. *Cithna tenella* (Jeffreys).

Lacuna tenella, Gwyn Jeffreys, Brit. Conch., vol. v. p. 204, pl. ci. fig. 7.
Hela tenella, Gwyn Jeffreys, Mediter. Moll., Ann. and Mag. Nat. Hist., 1870, ser. 4, vol. vi. p. 12.
" " Monterosato, Enumerazione, p. 23.
" " Seguenza, Form. Terz. Calabria, pp. 268, 356.
Cithna tenella, Jeffreys, Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1883, p. 110, sp. 1.

(?) Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 fathoms. Volcanic mud.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. San Miguel, Azores. 1000 fathoms. Volcanic mud.

Station 85. July 19, 1873. Lat. 28° 42′ N., long. 18° 6′ W. Palma, Canaries. 1125 fathoms. Volcanic mud.

Station 120. September 9, 1873. Lat. 8° 37′ N., long. 34° 28′ W. Pernambuco. 675 fathoms. Red mud.

Station 122. September 10, 1873. Lat. 9° 5′ S. to 9° 10′ S., long. 34° 49′ W. to 34° 53′ W. Pernambuco. 350 fathoms. Red mud.

Habitat.—From the Færœs to the Mediterranean, in 114 to 862 fathoms (Jeffr.)

Fossil.—From the Middle Pliocene onwards (Seguenza).

The specimen from Station 75 is peculiarly ruddy in colour, and of exceptional thickness; that is why I have put a query to it.

2. *Cithna margaritifera* (Watson), (Pl. XLIII. fig. 3).

Lacuna (*Hela*) *margaritifera*, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 97.

Station 246. July 2, 1875. Lat. 36° 10′ N., long. 178° E. Mid-Pacific, east of Japan. Bottom temperature 35°·1 F. 2050 fathoms. Globigerina ooze.

Shell.—High, conical, strong, white, smooth, with a spiral of small beads just below the suture. *Sculpture:* there are many unequal not strong lines of growth. There are, on the upper part of each whorl, and strongest on the last, longitudinal puckerings stretching down from the infrasutural row of beads. The surface is also finely scratched longitudinally. Spirals close; below the suture there is a fine beaded thread with a slight spiral furrow below it; there are many rounded, but very slightly raised spiral threads; the whole surface is also finely spirally fretted. *Colour* dead white, porcellanous. *Epidermis:* none preserved. *Spire* high and conical. *Apex* broken. *Whorls* three (remaining), flatly convex; the last disproportionately long. *Suture* fine, but rather deeply impressed. *Mouth* oval, pointed above and at the end of the pillar, where it is also somewhat patulous, but the little expanded angle there is hardly enough to suggest a canal. *Outer lip* rather strong, very regularly curved from its junction with the body to the point of the pillar. *Pillar* very much curved. *Inner lip* carried across the body by a pretty strong callus, thin, sharp-edged, and projecting on the pillar. *Umbilicus* not large, but there is a well-marked and clearly defined furrow, whose exterior edge, however, is not, like that of *Lacuna*, continuous with the outer lip. H. 0·2 in. B. 0·13, least 0·1. Penultimate whorl, height 0·06. Mouth, height 0·1, breadth 0·07.

This is a much stronger shell than *Cithna tenella*, Jeffr., usually is; in form it is much higher in the spire, and narrower in proportion to breadth; the whorls are much more compressed, and the narrow sharply impressed suture is much less deep; the mouth is oval, not round, and the sculpture of the surface is very different from the hyaline gloss and texture of that other. It is unfortunate that the apex, which is so characteristic a feature in *Cithna tenella*, is broken in the Challenger specimen.

Dr Gwyn Jeffreys, in his Moll. "Lightning" and "Porcupine," Proc. Zool. Soc. Lond., 1883, p. 111, says that this species is *Cithna tenella*, Jeffr., var. *costulata*. That is a varietal name plainly not wanted if my *Cithna margaritifera* is only a variety. For so reckoning it he assigns no reason. It had probably escaped his memory that it was on his recommendation, with considerable hesitation on my part, that the species was described as new. Published as new it is safer so to leave it. From Pernambuco to the North Pacific is a step which, unbroken, is somewhat long unless one is very sure of one's footing, and as regards that certainty, the fact that when the Pacific shell was under careful examination and full comparison with various forms of *Cithna tenella*, the final estimate of us both, and of Dr Jeffreys more decidedly than of myself, was that it should be held as distinct, must go for very much.

4. *Fossarus*, Gray, 1840.

Species.

1. *Fossarus ambiguus*, Linne. 2. *Fossarus cereus*, Wats.

1. *Fossarus ambiguus* (Linne).

Le Fossar, Adanson, Sénégal, p. 173, pl. xiii. fig. 1.
Helix ambigua, Linne, Syst. Nat. (ed. 12), p. 1251, No. 714.
" " Dillwyn, Catalogue, vol. ii. p. 973, sp. 191.
" " Wood, Index Test., p. 176, pl. xxxv. fig. 188.
Fossarus Adansonii, Philippi, Enumeratio Moll. Sicil., vol. ii. p. 147, pl. xxv. fig. 1.
Helix ambigua, Hanley, Ipsa Linn. Conch., pp. 391, 541.
Fossarus ambiguus, Philippi, Conch. Cab. (ed. Küster), p. 12, sp. 1, pl. i. figs. 1–8.
Fossar Adansoni, McAndrew, Distrib. Moll. N. Atlantic, p. 30.
Fossarus ambiguus, Fischer, Genre Fossarus, Journ. de conch., 1867, vol. xii. p. 256.
" " Weinkauff, Conch. Mittelmeer., vol. ii. p. 267, sp. 1.
" " Aradas and Benoit, Conch. Mar. Sicil., p. 181, No. 483.
" " Monterosato, Enumerazione, p. 23.

Station 113A. September 2, 1873. Lat. 3° 47′ S., long. 32° 24′ 30″ W. Anchorage off Fernando-Noronha. 7 to 25 fathoms. Volcanic sand and gravel.

Station 122. September 10, 1873. Lat. 9° 5′ to 9° 10′ S., long. 34° 49′ to 34° 53′ W. Off Pernambuco. 350 fathoms. Red mud.

Habitat.—Senegal (Adanson); Canaries, Madeira, and Azores (McAndrew); Mediterranean (Philippi).

Fossil.—In the Post-Tertiary beds of Sicily (Philippi).

Adanson's whole description of "*Le Fossar*" (*loc. cit. supra*) is admirable; his figure is equally so. Adams in his Genera (vol. iii. pl. xxxiii. fig. 7) gives a figure (copied from Philippi, Conch. Cab., *loc. cit. supra*) in which he misrepresents the frontal lobes entirely.

2. *Fossarus cereus*, Watson (Pl. XLIII. fig. 4).

Fossarus cereus, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 97.

Station 184. August 29, 1874. Lat. 12° 8′ S., long. 145° 10′ E. East of Cape York, North-east Australia. 1400 fathoms. Globigerina ooze. Bottom temperature, 36° Fahr.

Animal (Pl. XLIII. fig. 4d) differs from *Fossarus ambiguus*, Linne, in the absence of the eyes, of which I could discern no trace, and in the want of the frontal lobes at the base of the tentacles; the muzzle seemed to be slightly bifid. In the dried-up condition of the specimen this, with the operculum, was all I could make out.

Shell.—Globosely conical, not thin, but waxily translucent, with a thin polished yellow epidermis. *Sculpture:* there are many oblique, fine, rather obsolete lines of growth. Spirals—there are several irregular, unequally parted, rounded and rather obsolete spiral threads, which are closer on the base. *Colour:* that of the shell is a translucent white; it is covered with a very thin, most persistent, hard, smooth, and horny epidermis. *Spire* somewhat scalar. *Apex* eroded. *Whorls* three (remaining), convex, but a little compressed towards the middle, round on the base, of very rapid increase, the mouth being fully two-thirds of the whole length. *Suture* deep and irregular, but not canaliculated, except where eroded. *Mouth* oval, bluntly pointed above, glossy within. *Outer lip* thin and sharp, with a very regular curve, prominent on the base, and a little patulous towards the point of the pillar, where it is slightly, openly, and a little obliquely canaliculate. *Pillar* rather short, hollowed above, bending over a little to the left, and terminating in a slight oblique tooth, which results from the slight canaliculation in which the mouth terminates, and which, as in *Rissoina*, is hollowed out of the point of the pillar. *Inner lip* porcellanous white, slightly reverted, and very closely appressed; a very thin glassy layer across the body unites the lips. *Umbilicus* none. *Operculum* thin, cartilaginous, yellow, semilunar, subspiral. H. 0·2 in. B. 0·19, least 0·15. Penultimate whorl, height 0·065. Mouth, height 0·17, breadth 0·1.

The generic place of this shell cannot be considered as satisfactorily determined. The whole aspect removes it from *Admete* and even more from *Rissoina*, which presents in a stronger form the basal sinus. The absence of an umbilicus removes it from *Isapis*, of which the *Isapis fenestrata*, Carp., has a swelling on the pillar lip, strongly suggestive of this Australian species. On the whole, the general appearance of the shell is liker that of a *Fossarus* than anything else; and though

Philippi's generic diagnosis of *Fossarus* (Archiv. f. Naturgesch., 1841, vol. i. p. 42) gives an edentulate inner lip as a characteristic feature, yet in *Fossarus ambiguus* (Linne), which is the original type of the genus, there is a blunt tooth and a slight sinus or groove on the front of the pillar. As to the large umbilicus which is constantly attributed to *Fossarus ambiguus*, it is often a mere chink, and occasionally is quite absent. Of an epidermis, I confess I have never seen a trace.

5. *Iphitus*, Jeffreys, 1883.

Iphitus tuberculatus, n. sp. (Pl. XLVI. fig. 5).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Triangular, carinated, conical, strong, tubercled, glossy: with a stiliform but slightly tumid tip, a short flat-sided spire, a linear suture, a flat short conical base, a strongly varixed lip, and a small circular marginated mouth. *Sculpture:* there are on each whorl two broad and strongly tubercled spiral threads; on the body-whorl there are two more of these, one just at or below the periphery, the other near the middle, and continuous with the strong labral varix; on the stiliform process these are absent. *Colour* glossy white. *Spire* conical, with a very slight convexity. *Apex:* the stiliform process consists of three cylindrical whorls, of which the second is a little tumid; the first two are smooth, the third is scored with about six rounded spiral threads. *Whorls* 7½ to 8 in all, of very slow increase, the last is strongly angulated round the base. *Suture* slightly impressed, scarcely oblique. *Mouth* very small, very obliquely cut off from above downwards and backwards, round as in *Scalaria*, with a strong, prominent, continuous margin all round. *Outer lip* a little descending, enormously thick, having a strong varix and a double interior margin. *Inner lip* prominent on the body, where there is a sharp deep little cleft between the lip and the body-whorl; on the very short pillar the second margin of the mouth becomes prominent, and rises into a cord, with a minute furrow between it and the second basal spiral, which is continuous with the varix. H. 0·07 in. B. 0·049. Mouth, externally 0·027 each way, internally 0·017 each way.

This is an interesting addition, and of a more fully grown specimen to Dr Gwyn Jeffreys' curious little genus (see Proc. Zool. Soc. Lond., 1883, p. 113, *Iphitus tuberatus*, p. 114, pl. xx. fig. 12). The form of the mouth in his specimen was suggestive of a young shell, and this view the Challenger species seems to confirm. The absence of longitudinal striæ on the stiliform process indicates that this feature is specific, not generic.

Family HETEROPHROSYNIDÆ, Clark, 1855.

Genera. 1. *Jeffreysia*, Alder. 2. *Barleeia*, Clark.

1. *Jeffreysia*, Alder, 1850.

Jeffreysia edwardiensis, Watson (Pl. XLIII. fig. 5).

Jeffreysia edwardiensis, Watson, Prelim. Report, pt. 5, Journ. Linn. Soc. Lond., vol. xv. p. 99.

Station 145A. December 27, 1873. Lat. 46° 41′ S., long. 38° 10′ E. Prince Edward Island, between Cape of Good Hope and Kerguelen. 310 fathoms. Volcanic sand.

Shell.—Tumidly conical, flattish on the base, thin, glossy. *Sculpture:* the whole glossy surface is covered with extremely fine lines of growth, and with still fainter and more minute spirals, which are only vaguely discernible under the microscope and in very favourable light. *Colour* whitish, hyaline. *Spire* conical. *Apex* bluntish, and a little obliquely rounded. *Whorls* 4½, tumidly convex or rounded, of regular increase until the last, which is somewhat disproportionately swollen. *Suture* rather shallow and open. *Mouth* perpendicular, oval, rather large. *Outer lip* sharp and thin, with a slight sinus at its junction with the body; incurved above, slightly flattened in the middle, advancing below, patulous and prominent on the base, but slightly sinuated towards the point of the pillar. *Inner lip* just connected with the outer by a film across the body, closely and shortly bent back on the umbilicus, and sharp on the edge of the pillar. *Pillar* straight, angulately springing from the body-whorl, bending a little to the left. *Umbilicus* a minute chink, almost covered by the inner lip. H. 0·075 in. B. 0·048, least 0·04. Penultimate whorl, height 0·017. Mouth, height 0·037, breadth 0·028.

The general aspect of this shell resembles that of *Jeffreysia*, but the inner lip by no means presents so continuous a peristome as any of our British species of the genus, and the junction of the pillar to the body is quite distinctly angulated, which is not the case in any *Jeffreysia* known to me. If assigned to this genus, therefore, it is rather because none else lies nearer, and in the absence of the animal and of the operculum, a new genus would be absurd here.

2. *Barleeia*, Clark, 1853.

Barleeia imbricata, n. sp. (Pl. XLIII. fig. 2).

July 29, 1874. Levuka, Fiji. 12 fathoms.

September 7, 1874. Torres Strait, North-east Australia. 3 to 11 fathoms.

September 8, 1874. Flinders Passage, Torres Strait. 7 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York, North-east Australia. 8 fathoms. Coral mud.

July 1875. Honolulu. 40 fathoms.

Shell.—Rather long, conical, sharp-pointed, bluntly keeled, glossy, with a broad spirally striated base, and a biangulated mouth. *Sculpture:* Longitudinals—the lines of growth are microscopic and feeble. Spirals—there is round the base a blunt keel; within this the whole base is scored with strong flat threads, parted by narrow shallow furrows; the whole surface is covered with sharp microscopic scratches; in a few cases the threads and furrows of the base are simulated in colour on the side of the body-whorl. *Colour* of a ruddy sandy hue to porcellanous white. *Spire* conical, high. *Apex* small, consisting of two turbinated whorls, the extreme tip of which is slightly prominent and quite smooth. *Whorls* 8, rather short, conical, barely convex on the side, constricted just at the suture, over which the whorl has a slight tendency to project, giving the impression of a faint imbrication of the whorls,[1] the last is bluntly angulated at the periphery, and has a flatly conical base. *Suture* slightly angularly impressed. *Mouth* oval, pointed above, and also at the front of the pillar. *Outer lip* sharp and thin, slightly bent in above, straight to the basal angulation, whence it is arched and patulous to the point of the pillar, where it is angulated and prominent. *Inner lip* rather thin on the body, barely angulated at the base of the pillar, which is slightly oblique, with a thin patulous edge; behind the pillar is a minute umbilical chink. H. 0·11 in. B. 0·05. Mouth, height 0·042, breadth 0·029.

This species, which seems plentiful, varies considerably in size. In the absence of the animal and operculum its generic place is, of course, very doubtfully determined; but the form of the mouth seems to connect it rather with *Barleeia* than with the *Cingula* group of *Rissoa*.

Family Rissoïdæ, Gray, 1840.

Genera. 1. *Rissoa*, Frémenville. 2. *Hydrobia*, Hartmann. 3. *Eatoniella*, Dall. 4. *Rissoina*, d'Orbigny. 5. *Fenella*, A. Adams. 6. *Scaliola*, A. Adams. 7. *Skenea*, Fleming.

1. *Rissoa*, Frémenville, 1814.

Species.

A. Ribbed (*Rissoa*), *i.e.*, of which the longitudinal ribs are the striking feature.

1. *Rissoa costulata*, Alder.
2. *Rissoa deliciosa*, Jeffr.
3. *Rissoa similis*, Scacchi.
4. *Rissoa pyrrhias*, n. sp.
5. *Rissoa xanthias*, n. sp.
6. *Rissoa fayalensis*, n. sp.
7. *Rissoa amblia*, n. sp.
8. *Rissoa pernambucensis*, n. sp.
9. *Rissoa microstoma*, n. sp.

B. Reticulated (*Alvania*), *i.e.*, ribs and spirals pretty equal in strength.

10. *Rissoa* (*Alvania*) *calathus*, Forb. and Han.
11. *Rissoa* (*Alvania*) *cancellata* (Da Costa).
12. *Rissoa* (*Alvania*) *canariensis*, d'Orb., with var. of Manzoni.
13. *Rissoa* (*Alvania*) *hispidula*, Monterosato.
14. *Rissoa* (*Alvania*) *costata* (J. Ad.)
15. *Rissoa* (*Alvania*) *leacocki*, Wats.
16. *Rissoa* (*Alvania*) *didyma*, n. sp.
17. *Rissoa* (*Alvania*) *tarsodes*, n. sp.

[1] Hence the name.

18. *Rissoa* (*Alvania*) *trajectûs*, n. sp.
19. *Rissoa* (*Alvania*) *luscinia*, n. sp.

C. Spiralled strongly (*Onoba*), *i.e.*, in which the spiral threads are the striking feature.

20. *Rissoa* (*Onoba*) *fenestrata*, Krauss.
21. *Rissoa* (*Onoba*) *arenaria*, Mighels.
22. *Rissoa* (*Onoba*) *striata*, (J. Ad).
23. *Rissoa* (*Onoba*) *Watsoni*, Schwartz.
24. *Rissoa* (*Onoba*) *brachia*, n. sp.
25. *Rissoa* (*Onoba*) *adonis*, n. sp.
26. *Rissoa* (*Onoba*) *mercurialis*, n. sp.

D. Spiralled weakly (*Ceratia*), *i.e.*, in which there are spiral threads, but these not strong.

27. *Rissoa* (*Ceratia*) *glaphyra*, n. sp.
28. *Rissoa* (*Ceratia*) *pachia*, n. sp.
29. *Rissoa* (*Ceratia*) *transenna*, n. sp.
30. *Rissoa* (*Ceratia*) *macra*, n. sp.

E. Whorls flat and smooth (*Cingula*).

31. *Rissoa* (*Cingula*) *glabrata*, v. Mühlf.
32. *Rissoa* (*Cingula*) *rustica*, n. sp.
33. *Rissoa* (*Cingula*) *scopulorum*, n. sp.
34. *Rissoa* (*Cingula*) *alvearium*, n. sp.

F. Whorls rounded and smooth (*Setia*).

35. *Rissoa* (*Setia*) *albugo*, Wats.
36. *Rissoa* (*Setia*) *callosa*, Manzoni.
37. *Rissoa* (*Setia*) *tenuisculpta*, Wats.
38. *Rissoa* (*Setia*) *marionensis*, n. sp.
39. *Rissoa* (*Setia*) *principis*, n. sp.
40. *Rissoa* (*Setia*) *australis*, n. sp.
41. *Rissoa* (*Setia*) *philomelæ*, n. sp.
42. *Rissoa* (*Setia*) *quisquiliarum*, n. sp.
43. *Rissoa* (*Setia*) *edwardiensis*, n. sp.
44. *Rissoa* (*Setia*) *sinapi*, n. sp.
45. *Rissoa* (*Setia*) *triangularis*, n. sp.

G. Mouth separated from body-whorl (*Scrobs*).

46. *Rissoa* (*Scrobs*) *scrobiculator*, n. sp.
47. *Rissoa* (*Scrobs*) *badia*, n. sp.

A. Ribbed (*Rissoa*), *i.e.*, of which the longitudinal ribs are the striking feature.

1. *Rissoa costulata*, Alder.

Rissoa costulata, Alder, Ann. and Mag. Nat. Hist., 1844 (ser. 1), vol. xiii. p. 324, pl. viii. figs. 8, 9.
" " Forbes and Hanley, Brit. Moll., vol. iii. p. 103, pl. lxxvii. figs. 4, 5.
" *subcostulata*, Schwartz v. Mohrenstern, Rissoa, p. 41, sp. 32, pl. iii. fig. 32.
" *costulata*, Jeffreys, Brit. Conch., vol. iv. p. 35, vol. v. p. 208, pl. lxviii. fig. 1.
" " Weinkauff, Conch. Mittelmeer., vol. ii. p. 297, sp. 20.
" " Watson, Proc. Zool. Soc. Lond., 1873, p. 378, pl. xxxv. fig. 15.
" " Reeve, Conch. Icon., vol. xx. pl. iii. fig. 29.
" " Monterosato, Enumerazione, p. 24.
" " Seguenza, Form. Terz. Calabria, pp. 268, 355.
" " Weinkauff, Conch. Cab. (ed. Küster), p. 139, sp. 37, pl. x. figs. 1–3.
Apicularia guerini, Monterosato, Nomenclatura, p. 56.

February 10, 1873. Tenerife, Canaries. 70 fathoms.

Habitat.—Great Britain to the Mediterranean (Jeffreys); Madeira (Watson).

Fossil.—From the Middle Pliocene onwards (Seguenza).

The Marquis de Monterosato holds this as *Rissoa guerini*, Recluz, which the Baron Schwartz von Mohrenstern considers a distinct species. As I have remarked elsewhere and below in connection with *Rissoa parva*, Scacchi, the whole group absolutely requires revision, and nothing but worse confusion can result from mere partial meddling with it in the meantime. The *Rissoa costulata* of Risso (1826) is a synonym of the earlier *Rissoa variabilis*, v. Mühlf. (1818), and is therefore out of reckoning.

2. *Rissoa* (*Alvania*) *deliciosa*, Jeffreys.

Rissoa deliciosa, Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1884, p. 121, sp. 27, pl. ix. fig. 7.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 178, sp. 95, pl. xxiii. figs. 5, 6.

Station 85. July 19, 1873. Lat. 28° 42′ N., long. 18° 6′ W. Off Palma, Canaries. 1125 fathoms. Volcanic mud.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Habitat.—North-east Atlantic, in from 72 to 1095 fathoms; Mediterranean, Algerine coast, in from 5 to 266 fathoms (Jeffreys).

Dr Gwyn Jeffreys considers the specimens from Station 85 as "allied to" his species, and those from Station 122 as distinct from both it and those from Station 85. After examination of his specimens, which he kindly sent me, I am still of the opinion that both sets of Challenger shells belong to one species, and that species *Rissoa deliciosa*, Jeffr. They are much larger specimens, with much fewer and stronger ribs and stronger spirals, and in these respects the specimens from Pernambuco greatly surpass those from Palma, but the whole aspect of the shells gives one the impression of their being well-thriven specimens, not distinct species.

The Marquis of Monterosato (Nomenclatura, p. 60) claims *Rissoa deliciosa*, Jeffr., as a synonym of his *Alvania electa*. On that point I am unable to speak, the *Alvania electa* being to me unknown, but even if it be so, as the Marquis asserts, I am quite sure that his principles of classification would prevent him admitting the Challenger shells into his species. Of course no one can object to a writer following any system of classification he pleases, but unless his system commends itself to others, it is impossible for them to follow or to quote him; and if the system which animates the Nomenclatura be but pushed a little further, each of us will soon have a distinct generic title for every single specimen of a shell we possess, and the confusion of the Tower of Babel will be reproduced in Conchology.

3. *Rissoa similis*, Scacchi.

Rissoa similis, Scacchi, Catalogus Conch. Napol., 1836, p. 14.
„ „ Philippi, Enumeratio, vol. ii. p. 124, sp. 5, pl. xxiii. fig. 5.
„ „ Schwartz v. Mohrenstern, Rissoa, p. 38, sp. 28, pl. iii. fig. 28.
„ „ Weinkauff, Conch. Mittelmeer., vol. ii. p. 297.
„ „ Manzoni, Rissoa des Canaries, &c., Journ. de conch., 1868, vol. xvi. p. 248.
„ „ Aradas and Benoit, Conch. Mar. Sicil., p. 193, No. 513.
„ „ Watson, Madeira Mollusks, Proc. Zool. Soc. Lond., 1873, p. 379, pl. xxxv. fig. 16.
„ „ Monterosato, Enumerazione, p. 23.
„ (*Apicularia*) *similis*, Monterosato, Nomenclatura, p. 56.
„ *similis*, Seguenza, Form. Terz. Calabria, pp. 268, 320, 355.
„ „ Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1884, p. 117, sp. 19.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 117, sp. 16, pl. iii. figs. 15, 16.

February 10, 1873. Tenerife. 78 fathoms.

Habitat.—Mediterranean, Madeira, and Canaries.

Fossil.—From the Pliocene of Calabria, the Pleistocene of Sicily, and the recent clays of both (Seguenza).

Dr Gwyn Jeffreys (Brit. Conch., vol. iv. p. 37) says he regards this as a small variety of *Rissoa costulata*, Alder, a view I entirely share, with the addition that I believe both these and a great many other species, British and foreign, to be mere varieties of *Rissoa parva*, Da Costa. Perhaps, when all zoological classification has been reduced to chaos, and each museum specimen has received a separate name, a real revision of species will be entered upon. In the meantime such labour is thrown away, and Scacchi's species has as much right to recognition as the others around it.

4. *Rissoa pyrrhias*,[1] n. sp. (Pl. XLIV. fig. 4).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Strong, oval, pointed, conical, broad, continuously ribbed, glossy, translucent white, with a slight marginated suture, flat minutely subscalar whorls, and an oval pointed externally varixed mouth. *Sculpture:* Longitudinals—there are on each whorl about 13 strong straight distant rounded ribs, which are continuous from whorl to whorl, though cut off by the suture below which each rises suddenly in a well-marked triangular bluntly pointed tubercle; they cease almost abruptly on the base; the last forms a strong labral varix; there are faint lines of growth. Spirals—on the upper part of the whorls there are very faint traces of spiral threads; on the base are five or six broadish but feeble threads. *Colour* translucent white, with a brilliant surface. *Spire* broadly conical, slightly subscalar, from the prominence of the subsutural tubercles. *Apex:* the 2½ embryonic whorls are small and subcylindrically globose, with the small rounded tip slightly prominent; they are tawny yellow, and are scored with coarse but feeble spiral threads. *Whorls* 6, flatly conical, of rapid increase. *Suture* linear, slightly impressed and submarginated by the costal tubercles. *Mouth* large, ovate, pointed above, a little oblique. *Outer lip* bevelled off to a thin edge, strengthened by a strong external varix, very patulous on the base. *Inner lip* thin, but defined on the body, thin and prominent on the pillar, where it has a minute umbilical furrow behind it. H. 0·115 in. B. 0·07. Mouth, height 0·045, breadth 0·041.

A good deal like *Rissoa xanthias*, Wats., and *Rissoa amblia*, Wats., which see for the differences.

5. *Rissoa xanthias*,[2] n. sp. (Pl. XLIV. fig. 5).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

[1] πυῤῥίας, red head, from its coloured apex.

[2] ξανθίας, yellow head.

Shell.—Thin, ovate-oblong, conical, glossy, translucent white, continuously ribbed, with a row of rather sharp tubercles just below the suture, flat whorls, a bluntly angulated rounded base, and an oval thin-lipped mouth. *Sculpture:* Longitudinals—there are from 12 to 16 ribs, which run continuously from whorl to whorl, and tend to become obsolete and sparse on the last whorl; at the top of each whorl these ribs take their rise in a small prominent tubercle; on the base they disappear. Spirals—there are traces, generally feeble above, but much stronger on the base, of close flat rounded threads, which die out in the middle of the base. *Colour* translucent white, scarcely glossy. *Spire* conical. *Apex* conical; it consists of four tawny or yellow embryonic whorls, convex, angulated, the last scored below with three granulated spirals, where the convexity exists; the third and second have two of these spirals; above these spirals the individual whorls contract rapidly, with a slightly concave outline; the tip is smooth, and relatively to the others a little large. *Whorls* 7, flattened on the sides, conical, of rather rapid increase. *Suture* linear, slightly impressed. *Mouth* largish, oval, pointed above, a little oblique. *Outer lip* thin, unvarixed, somewhat patulous in front. *Inner lip* thin on the body, sharp and prominent at the pillar, where a slight umbilical groove lies behind it. H. 0·084 in. B. 0·045. Mouth, height 0·033, breadth 0·03.

This species at first sight greatly resembles *Rissoa pyrrhias*, Wats., but is smaller, is slightly different in form, being longer in proportion to breadth, and has no labral varix; but the most marked difference lies in the apex of the two shells, which, very like in colour, differ in form, in sculpture, and in number of whorls.

6. *Rissoa fayalensis*, n. sp. (Pl. XLIV. fig. 7).

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Shell.—Thin, ovate, conical, translucent white, remotely ribbed, with conical whorls and a blunt tip. *Sculpture:* Longitudinals—there are about 12 sharpish, narrow, nearly continuous, but slightly irregular, faintly curved ribs, which die out rather suddenly at the base. Spirals—on the base there are about six remote rather feeble threads. *Colour* translucent white. *Spire* conical, short. *Apex* very blunt, the two embryonic whorls being rather large, and depressedly rounded; they are quite smooth. *Whorls* 5, convexly conical, very slightly constricted round the bottom; they are of regular increase; the last one is very bluntly angulated round the base. *Suture* linear, with a very slight constriction; a little oblique. *Mouth* largish, oval, very slightly pointed above. *Outer lip* a little straight above, rounded on the base. *Inner lip* very thin on the body, narrow and scarcely prominent on the pillar, where there is the minutest possible umbilical furrow. H. 0·068 in. B. 0·04. Mouth, height 0·03, breadth 0·022.

This is a shorter, broader shell than *Rissoa amblia*, with crisper, remoter ribs, and no umbilicus; the apex, too, though blunt, has the extreme tip smaller.

7. *Rissoa amblia*,[1] n. sp. (Pl. XLIV. fig. 8).

Station 85. July 19, 1883. Lat. 28° 42′ N., long. 18° 6′ W. Off Palma, Canaries. 1125 fathoms. Volcanic mud.

Shell.—Thin, oblong, conical, glossy, horny white, closely ribbed, with rounded whorls, a rounded slightly produced and minutely umbilicated base, a blunt rounded top, and an impressed suture. *Sculpture:* Longitudinals—there are about 20 rounded wavy ribs parted by rather narrower rounded furrows; they become rather suddenly extinct on the base. Spirals—there are very faint traces of flatly rounded spiral threads, of which three round the outside of the base are stronger than the others; the middle of the base is plain. *Colour* translucent horny white. *Spire* conical. *Apex* very blunt and rounded, the embryonic tip, consisting of a whorl and a half, being very large and depressedly globose; it is quite smooth, having only the most obsolete traces of very minute superficial rounded longitudinal lines. *Whorls* 5½, convex, but subconical, with a very faintly angular bulge round the bottom; the base is rounded, but slightly flattened; the whorls are of regular increase, but the last is largish. *Suture* a little constricted, scarcely oblique. *Mouth* rather large, not oblique, scarcely oval, with a very slight angulation above and at the point of the pillar. *Outer lip* thin and sharp, semicircular, level on the edge. *Inner lip* nearly semicircular, slightly detached just at the suture, thin, but defined and very short on the body, on the pillar thin and sharp. *Umbilicus* small but distinct the edge of the base being bluntly angulated, round, poriform, very slightly covered by the pillar lip, just where it leaves the body. H. 0·093 in. B. 0·058. Mouth, height 0·039, breadth 0·03.

This species is rounder in all its forms than either *Rissoa pyrrhias*, Wats., or *Rissoa xanthias*, Wats.; the sculpture is much less sharp, and there are no infrasutural tubercles on the ribs; but the apex in particular is entirely different.

8. *Rissoa pernambucensis*, n. sp. (Pl. XLIV. fig. 9).

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Strong, ovate, conical, white, feebly and remotely ribbed, blunt, round tipped, with flat-sided whorls, a linear suture, a varixed lip, and a broad short base. *Sculpture:* Longitudinals—there are near the mouth irregular hair-like flexuous lines of growth; on the last whorl there are from 15 to 20 narrow feeble rounded flexuous ribs, with broad flat interstices; these ribs barely appear on any of the earlier whorls; the last forms a

[1] ἀμβλεῖα, blunt.

broad but low varix close to the lip-edge. Spirals—there are very faint microscopic spiral markings. *Colour* translucent white, with a highly polished surface. *Spire* conical, with continuous very slightly convex outlines. *Apex* quite smoothly rounded, without any projecting tip or trace of break between the embryonic and adolescent shell. *Whorls* 5, quite flat and conical in their slope, without any angulation at the periphery; the base is very slightly convex. *Suture* linear, very slightly oblique. *Mouth* rather large, oval, pointed above, and very slightly so at the front of the pillar, a little oblique. *Outer lip* not patulous, except on the base, thin-edged, and with the edge bevelled in from the outside, in its arch semicircular. *Inner lip* rather thin, but defined on the body; sharp, but barely prominent down the pillar, with no umbilical chink behind it. H. 0·088 in. B. 0·05. Mouth, height 0·039, breadth 0·031.

This species differs from *Rissoa fayalensis*, Wats., in size, sculpture, and form.

9. *Rissoa microstoma*, n. sp. (Pl. XLIV. fig. 10).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Strong, oblong, conical, translucent, glossy, strongly remotely ribbed, blunt, round tipped, with barely convex-sided whorls, a linear suture, a squarish, flatly conical base, and a small mouth. *Sculpture:* Longitudinals—there are on the last two whorls about 10 (on the earlier whorls 11 or 12) strong sharp-topped distant ribs, which run more or less continuously, and somewhat obliquely, down the spire from whorl to whorl; the furrows between these ribs are wide and concave; the lines of growth are microscopic and very faint. Spirals—there are very faint microscopic markings. *Colour* translucent white, glossy. *Spire* conical, with almost continuous lines. *Apex* large and rounded, the extreme tip being unusually large and very inconspicuous; the first two whorls are quite smooth. *Whorls* 6, barely convex, very feebly and roundly angulated at the periphery, which is quite at the bottom of the shell, the base being barely convex. *Suture* scarce appreciably impressed. *Mouth* small, roundly oval, very slightly pointed above and at the point of the pillar, scarcely oblique. *Outer lip* patulous, except just at its junction with the body, where it is slightly incurved, thin, bevelled off from the inside, where a little remote from the lip-edge the opening is contracted by a varix. *Inner lip* strong and defined on the body, thinnish sharp and slightly expanded on the pillar, and though projecting there, there is scarcely the slightest furrow behind it. H. 0·122 in. B. 0·062. Mouth, height 0·039, breadth 0·035.

This is a much narrower and longer form than *Rissoa pernambucensis*, with much stronger and differently shaped ribs, and a smaller rounder mouth.

B. Reticulated (*Alvania*), *i.e.*, ribs and spirals pretty equal in strength.

10. *Rissoa* (*Alvania*) *calathus* (?), Forbes and Hanley.

Rissoa calathus, Forbes and Hanley, Brit. Moll., vol. iii. p. 82, pl. lxxviii. fig. 3.
„ „ Gwyn Jeffreys, Brit. Conch., vol. iv. p. 11, vol. v. p. 207, pl. lxvi. fig. 4.
Alvania calathus, Weinkauff, Conch. Mittelmeer., vol. ii. p. 304, sp. 5.
„ „ Hidalgo, Moll. Mar. Espagne, Journ. de conch., 1867, vol. xv. p. 391, sp. 14.
Rissoa calathus, Reeve, Conch. Icon., vol. xx. pl. v. fig. 39.
Alvania calathus, Seguenza, Formaz. Terz. Calabria, p. 268.
Rissoa calathus, Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1884, p. 111, sp. 2.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 170, sp. 83, pl. xxii. fig. 2.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 fathoms. Volcanic mud.

Habitat.—From the Hebrides of Scotland to the Canaries and the Mediterranean (Jeffreys).

Fossil.—In the Middle Pliocene (Seguenza).

The various identifications of the foreign specimens of this shell seem to need careful revision. The solitary Challenger specimen of the species is in such bad condition that the identification of it has been very difficult, and in the end, not altogether without doubt.

11. *Rissoa* (*Alvania*) *cancellata* (Da Costa).

Turbo cancellatus, Da Costa, Brit. Conch., 1778, p. 104, pl. viii. figs. 6–9.
„ *cimex* (not of Linne), Wood, Ind. Test., p. 150, pl. xxx. fig. 15.
Rissoa crenulata, Michaud, Rissoa, 1832, p. 15, sp. 10, single pl., figs. 1, 2.
„ „ Potiez and Michaud, Moll. Douai, vol. i. p. 268, sp. 10.
„ „ Lamarck, Anim. s. vert. (ed. Desh.), vol. viii. p. 465, sp. 2.
„ „ Philippi, Enumeratio, vol. ii. p. 126, sp. 13, p. 131, sp. 8.
„ „ Forbes and Hanley, Brit. Moll., vol. iii. p. 80, pl. lxxix. figs. 1, 2.
„ „ McAndrew, Distrib. Moll. N. Atlantic, Brit. Assoc. Report, 1851, p. 31.
„ *cancellata*, J. Gwyn Jeffreys, Brit. Conch., vol. iv. p. 8, vol. v. pl. lxvi. fig. 3.
Alvania crenulata, Weinkauff, Conch. Mittelmeer., vol. ii. p. 301.
Rissoa crenulata, Aradas e Benoit, Conch. Mar. Sicil., p. 197, No. 523.
„ *cancellata*, Monterosato, Notiz. Conch. foss. Monte Pellegrino, &c., p. 29.
„ „ Watson, Proc. Zool. Soc. Lond., 1873, p. 367, pl. xxxiv. fig. 2.
„ „ Reeve, Conch. Icon., vol. xx. pl. iv. fig. 32.
„ „ Monterosato, Enumerazione, p. 24.
„ „ Seguenza, Formaz. Terz. Calabria, pp. 116, 268, 320.
„ „ Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1884, p. 111, sp. 1.
„ (*Alvania*) *crenulata*, Weinkauff, Conch. Cab. (ed. Küster), p. 115, sp. 14, pl. iii. figs. 9–12, pl. xix. figs. 6, 7.
Acinopsis cancellata, Monterosato, Nomenclatura, p. 63.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Habitat.—From the Hebrides of Scotland (Jeffreys) to the Canaries (McAndrew) and Mediterranean (Monterosato). 0 to 128 fathoms.

Fossil.—From the Upper Miocene (Seguenza).

12. *Rissoa* (*Alvania*) *canariensis*, d'Orbigny, and var. of Manzoni.

Rissoa canariensis, d'Orbigny, Moll. Canaries, Webb and Berthelot, p. 78, pl. vi. figs. 5–7.
" " Manzoni, Rissoa Canaries, &c., McAndrew, Journ. de conch., 1868, vol. xvi. p. 245, sp. 11.
" " Watson, Proc. Zool. Soc. Lond., 1873, p. 376, pl. xxxv. fig. 12.
" " Reeve, Conch. Icon., vol. xx. pl. ix. fig. 82.
" " Gwyn Jeffreys, "Lightning" and "Porcupine" Mollusca, Proc. Zool. Soc. Lond., 1884, p. 114, sp. 9.
" " Weinkauff, Conch. Cab. (ed. Küster), p. 118, sp. 18, pl. iii. figs. 19, 20.

February 10, 1873. Tenerife, Canaries. 70 fathoms.

Habitat.—Canaries (d'Orbigny); Madeira (Watson).

The variety of this somewhat variable form is that referred to by Manzoni (*loc. cit. supra*) as resembling *Rissoa punctura* (Montague). It differs from that species in having the sculpture less sharp and somewhat coarser; the base is more produced; the whorls are more conical, and less roundedly cylindrical; the suture is less impressed (though the lower part of each whorl is a little more constricted); the apex is blunter, being larger and more tabulated; and the extreme tip is more impressed.

13. *Rissoa* (*Alvania*) *hispidula* (Monterosato).

Rissoa clathrata (but not of Grateloup), Philippi, Enumeratio, vol. ii. p. 223, sp. 16b, and p. 303, note, pl. xxviii. fig. 20.
Alvania clathrata, Weinkauff, Conch. Mittelmeer., vol. ii. p. 302, sp. 2.
Rissoa clathrata, Monterosato, Enumerazione, p. 24.
" " Reeve, Conch. Icon., vol. xx. pl. ix. fig. 76.
Alvania clathrata, Seguenza, Form. Terz. Calabria, pp. 268, 320.
Rissoa clathrata, Weinkauff, Conch. Cab. (ed. Küster), p. 167, sp. 78, pl. xxi. figs. 9, 12.
Acinus hispidulus, Monterosato, Nomenclatura, p. 63.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Habitat.—Mediterranean (Philippi).

Fossil.—From the Middle Pliocene onwards (Seguenza).

I am indebted to Dr Gwyn Jeffreys for the identification of this species, my acquaintance with which is slight.

Philippi (*loc. cit. supra*, p. 303, note) withdraws his name of *clathrata* as preoccupied, but does not say by whom. It had been previously used by Grateloup for a Falunien fossil (see Tab. Coq. foss. tert. Dax Landes, Bull. Soc. Linn. Bordeaux, 1827, vol. ii. p. 133, No. 104). The identification of the species with *Rissoa zetlandica* (Mont.), is, according to Monterosato, a mistake.

14. *Rissoa* (*Alvania*) *costata* (J. Adams).

Turbo costatus, J. Adams, Trans. Linn. Soc. Lond., vol. iii. p. 65, pl. xiii. figs. 13, 14.
„ „ Wood, Ind. Test., p. 157, pl. xxxi. fig. 107.
Rissoa exigua, Michaud, Rissoa, p. 18, sp. 13, single pl., figs. 29, 30.
„ „ Lamarck, Anim. s. vert. (ed. Desh.), vol. viii. p. 481, sp. 33.
„ „ Philippi, Enumeratio, vol. ii. p. 125, sp. 7.
„ *costata*, Forbes and Hanley, Brit. Moll., vol. iii. p. 92, pl. lxxviii. figs. 6, 7.
„ „ Jeffreys, Brit. Conch., vol. iv. p. 22, pl. lxvii. fig. 2.
Alvania costata, Weinkauff, Conch. Mittelmeer., vol. ii. p. 310.
Rissoa costata, Aardas e Benoit, Conch. Mar. Sicil., p. 203, No. 539.
„ „ Watson, Proc. Zool. Soc. Lond., 1873, p. 369, pl. xxxiv. fig. 5.
„ „ Monterosato, Enumerazione, p. 25.
„ „ Reeve, Conch. Icon., vol. xx. pl. iii. fig. 20.
„ „ Seguenza, Form. Terz. Calabria, p. 267.
„ „ Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1884, p. 113, sp. 15.
„ (*Alvania*) *costata*, Weinkauff, Conch. Cab. (ed. Küster), p. 119, sp. 19, pl. iii. figs. 25, 26.

February 10, 1873. Tenerife, Canaries. 70 fathoms.

Habitat.—From Shetland and the Baltic to the Canaries and the Mediterranean (Jeffreys).

Fossil.—From the Middle Pliocene onwards (Seguenza).

15. *Rissoa* (*Alvania*) *leacocki*, Watson.

Rissoa leacocki, Watson, Madeira Mollusks, Proc. Zool. Soc. Lond., 1873, p. 365, pl. xxxiv. fig. 1.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 157, sp. 61, pl. lxix. fig. 8.

February 10, 1873. Tenerife, Canaries. 70 fathoms.

Habitat.—Madeira (Watson).

It is very possible this may be the *Rissoa calathus*, Manzoni, of the Canaries and Madeira (see Journ. de conch., 1868, p. 251, pl. x. fig. 9), but his species is quite certainly not that of Forbes and Hanley, from which the squarely impressed furrow at the suture easily marks it off. The difficulty of speaking positively to the identity of my Madeiran species with that of Manzoni lies partly in the bad condition of the specimens of Manzoni's species, so far as known to me, and partly in the fact that *Rissoa leacocki* is a somewhat variable form; the specimens from the Canaries and from the Selvagens, islands lying between Madeira and the Canaries, are very much stronger and coarser, and at first sight strangely unlike the Madeira shells of the species.

16. *Rissoa* (*Alvania*) *didyma*,[1] n. sp. (Pl. XLIV. fig. 1).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra and St Thomas Islands, West Indies. 390 fathoms. Pteropod ooze.

[1] δίδυμος, St Thomas.

Shell.—Oblong, conical, blunt tipped, yellow, strong, rather coarsely reticulated, with a small round mouth, and a flat, thick, strongly varixed lip. *Sculpture:* Longitudinals—there are about 12 straight strongish narrow ribs, of which the last forms a powerful varix: these die out on the base. Spirals—there are about seven strongish threads, of which the first below the suture is feeble, the next two at the periphery very strong, those on the base rather feeble, except the last, which coils like a cord close round the pillar; the cords and ribs form sharp little tubercles at their intersections. *Colour* yellowish, dull. *Spire* high, narrow, conical. *Apex* blunt, but the extreme tip, round and small, rises a little; the first two whorls are those of the embryonic shell, and are smooth, with one strongish thread at the top running into the suture. *Whorls* $5\frac{1}{2}$, convex, somewhat angulated by the second and third spirals, of regular increase. *Suture* impressed, and rather oblique. *Mouth* round, very bluntly pointed above. *Outer lip* patulous, very thick; to the outside it is bevelled off to a broad but sharp edge, round the inside lies a flat narrow shelf. *Inner lip* rather thin across the body, down the pillar its edge is slightly prominent, with a minute umbilical groove behind it, and separating it from the last cord-like spiral. H. 0·085 in. B. 0·04. Mouth, height 0·03, breadth 0·027.

This species very strongly resembles *Rissoa leacocki*, Wats., from Madeira, but is very much smaller, and has not the peculiar square furrow at the suture which is so characteristic of that species; the highest spiral here is feeble, while in *Rissoa leacocki* it is fully as strong as the others. The apex, too, so far as its condition permits of observation, has not the strong spiral threads of that species. One broken specimen seems to indicate that there is considerable variation in size.

17. *Rissoa* (*Alvania*) *tarsodes*,[1] n. sp. (Pl. XLIV. fig. 2).

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Shell.—Ovate to oblong, conical, blunt tipped, white, rather finely reticulated, with a round mouth, and a remotely varixed thin-edged lip. *Sculpture:* Longitudinals—there are about 20 sharpish rounded ribs, which, strong at the suture, die out rather suddenly toward the edge of the base; the last, which is rather remote from the lip-edge, is a broad strong varix, the shallow interstices are fully broader than the ribs. Spirals—there are about eight sharpish threads, much like the ribs; the first is rather remote from the suture; the last two, which are in the middle of the base, are feeble, the shallow interstices are fully broader than the spirals. *Colour* translucent, dull white. *Spire* rather high, conical. *Apex* blunt, the first two whorls being rather depressedly globose, and quite smooth. *Whorls* 5, convex, of regular increase. *Suture* impressed, and very slightly oblique.

[1] ταρσώδης, crate-like

Mouth sub-oval, a little oblique to the axis, bluntly pointed above. *Outer lip* patulous, with a thin-edged, remotely varixed lip; its sweep is a very regular curve, and its front line level. *Inner lip* not thick, but distinct on the body; on the pillar it is narrow, sharp, and prominent, with a minute umbilical channel behind it. H. 0·075 in. B. 0·04. Mouth, height 0·031, breadth 0·028.

This species much resembles *Rissoa punctura* (Mont.), in sculpture, but the longitudinals are straighter and stronger, the apex is blunt and flat, and the last whorl is smaller.

In this last respect it is more like *Rissoa jeffreysi*, Waller, but in sculpture it is less like that species, and the mouth is smaller.

Than *Rissoa abyssicola*, Forbes, this is a smaller, narrower, thinner shell, with stronger sculpture, a more oblong and superiorly pointed mouth, and a sharper tip.

18. *Rissoa* (*Alvania*) *trajectûs*,[1] n. sp. (Pl. XLIV. fig. 6).

September 7, 1874. Torres Strait, Cape York, North-east Australia. 3 to 11 fathoms.

September 8, 1874. Flinders Passage, near Cape York, North-east Australia. 7 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Near Cape York. 6 fathoms. Coral mud.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, off south-west point of Papua. 28 fathoms. Green mud.

Shell.—Small, strong, conic-obovate, reticulated, white, with a tumid body-whorl, a broad round base, short spire, few conical whorls, an excavated suture, and a short pear-shaped mouth. *Sculpture:* Longitudinals—there are on the last whorl about 18 narrow, well-raised, rounded, slightly oblique ribs, which stop abruptly at the periphery, not being present in the sutural channel, nor almost at all on the base; they are crowded on the earlier whorls, but on the body-whorl the flat furrows which part them are wider than the ribs; the last rib broadens into a strong labral varix. Spirals—above the periphery there are six distinct crowded rounded threads, which score the ribs; below the last of these there is a little furrow, which forms the contraction for the suture; below this on the base are about five rounded slightly parted threads. *Colour* white. *Spire* short, and stumpily conical, subscalar. *Apex* small, rounded, ending in the minute dome-shaped tip, which just rises into view in the middle; the first two whorls are microscopically striated spirally. *Whorls* 5 in all, short and broad, with a barely convex conical outline; the last is round and tumid, with a faintly concave conical base. *Suture* nearly horizontal; it is itself indistinguishable at the bottom of a little narrow deep rounded nick-like trench.

[1] With a reference to Flinders' Passage, the place of its finding.

Mouth slightly oblique, irregularly pear-shaped, the curve of the inner and outer lip being dissimilar; it is slightly pointed above, and also at the point of the pillar. *Outer lip* thickened by the varix, but bevelled to a thin edge, which is fairly level; in direction it is equally curved throughout; on the base it is patulous, above slightly inverted. *Inner lip* thin, on the pillar sharp, concave throughout. H. 0·062 in. B. 0·04. Mouth, height 0·027, breadth 0·024.

This species in form resembles a sharp-tipped *Rissoa subsoluta*, Aradas, while its sculpture is intermediate between *Rissoa abyssicola*, Forbes (*Rissoa testæ*, var. ?, Aradas and Magg.), and *Rissoa deliciosa*, Jeffr.

19. *Rissoa* (*Alvania*) *lusciniæ*,[1] n. sp. (Pl. XLIV. fig. 3).

Station 135c. October 17, 1873. Lat. 37° 25′ 30″ S., long. 12° 28′ 30″ W. Nightingale Island, off Tristan da Cunha. 100 to 150 fathoms.

Shell.—Oblong, broadish, conical, blunt tipped, white, with spiral threads, a deepish suture, and a large round patulous mouth. *Sculpture:* Longitudinals—on the upper whorls, especially on the penultimate, there are about 16 broadish blunt low ribs, forming blunt tubercles on the spirals; on the last whorl these become very faint. Spirals—on the last whorl there are about nine fine distinct raised equally distant threads, of which three occupy the base; they are parted by broadish open furrows. *Colour* a uniform yellow glossy white. *Spire* elevated, conical. *Apex* blunt, the extreme tip rising like a small smooth dome on one side of the flat top. *Whorls* 5, very convex; the first 3½ are of slow and regular increase; the last is much longer than the rest. *Suture* deeply impressed, and not much oblique. *Mouth* large, round, open, parallel to the axis. *Outer lip* patulous, with a sharp edge strengthened by an external varix; its sweep is rounded; in the middle it is prominent, retreating a little at its origin and at the point of the pillar, so as to form a slight *Rissoina*-like channel at these two points. *Inner lip* pretty strong on the body; on the pillar it projects as a sharpish lamina, which is continued round the outer circumference of the mouth. H. 0·09 in. B. 0·04. Mouth, height 0·034, breadth 0·029.

This species is extremely like *Rissoa carribæa*, d'Orb., in form, but the sculpture is different, and the whorls are a little less swollen.

C. Spiralled strongly (*Onoba*), *i.e.*, in which the spiral threads are the striking feature.

20. *Rissoa* (*Onoba*) *fenestrata*, Krauss.

Rissoa fenestrata, Krauss, Südafrik. Moll., p. 86, pl. v. fig. 20.

[1] So called from the name of the island.

December 1873. Simons Bay, Cape of Good Hope. 15 to 20 fathoms.

Habitat.—Near the mouth of the Knysna river, Cape of Good Hope.

21. *Rissoa* (*Onoba*) *arenaria* (Mighels).

Cingula arenaria, Mighels, Bost. Journ. Nat. Hist., 1842, vol. iv. p. 49, pl. iv. fig. 24.
,, ,, Mighels, Cat. Shells Maine, Bost. Journ. Nat. Hist., 1843, p 34 (separate impression).
Rissoa Mighelsi, Stimpson, Proc. Bost. Soc., vol. iv. p. 15.
,, (*Onoba*) *arenaria*, Mörch, West Greenland Moll. in Rink's Greenland, No. 55.
,, *Mighelsi*, Gould, Inverteb. Massachusetts (ed. Binney), p. 301, fig. 570.
,, ,, Tryon, Mar. Conch. United States, p. 84, sp. 8, pl. xi. fig. 160.
,, *arenaria*, Jeffreys, Moll. "Valorous," Ann. and Mag. Nat. Hist., 1877, ser. 4, vol. xix. p. 238.

Station 135c. October 17, 1873. Lat. 37° 25′ 30″ S., long. 12° 28′ 30″ W. Nightingale Island, Tristan da Cunha. 100 to 150 fathoms.

Habitat.—Casco Bay, Maine (Mighels); West Greenland (Mörch); also Newfoundland, Finmark, and Spitzbergen, 5 to 40 fathoms (Jeffreys).

Dr Gwyn Jeffreys considers this Challenger shell a new species "allied to *Rissoa arenaria*, Mighels and Adams." This species, which Mighels says is very rare, I know only through the solitary specimen which Dr Gwyn Jeffreys kindly sent for my examination, and which exactly corresponds with the figure and description in Gould; it is markedly broader than the Challenger specimen, which, however, is identical with it in sculpture and in microscopic markings.

The name "arenaria" was needlessly changed by Stimpson, who fancied it preoccupied by "Montague;" this last being probably a slip for Maton and Rackett, whose *Helix arenaria* (*Turbo arenaria* of Turton) is (*teste* Dr Gwyn Jeffreys) *Odostomia decussata* (Mont.)

22. *Rissoa* (*Onoba*) *striata* (J. Adams).

Turbo striatus, J. Adams, Trans. Linn. Soc. Lond., vol. iii. p. 66, pl. xiii. figs. 25, 26.
,, ,, Montague, Test. Brit., vol. ii. p. 326, pl. xiii. figs. 25, 26.
,, ,, Wood, Ind. Test., p. 157, pl. xxxi. fig. 106.
Rissoa minutissima, Michaud, Rissoa, p. 20, sp. 14, single pl., figs. 27, 28.
,, ,, Potiez et Michaud, Gall. de Douai, vol. i. p. 274, sp. 24.
,, ,, Lamarck, Anim. s. vert. (ed. Desh.), vol. viii. p. 480, sp. 32.
Cingula aculeus, Gould, Inverteb. Massachusetts, p. 266, fig. 172.
Rissoa striata, Forbes and Hanley, Brit. Moll., vol. iii. p. 94, pl. lxxviii. figs. 8, 9.
,, ,, J. Gwyn Jeffreys, Brit. Conch., vol. iv. p. 37, vol. v. p. 208, pl. lxviii. fig. 2.
Cingula striata, Weinkauff, Conch. Mittelmeer., vol. ii. p. 284, sp. 11.
Rissoa striata, Watson, Madeiran Rissoæ, Proc. Zool. Soc. Lond., 1873, p. 368, pl. xxxiv. fig. 3 (not 4).
,, ,, Reeve, Conch. Icon., vol. xx. pl. v. fig. 40.
Onoba striata, G. O. Sars, Moll. Arct. Norv., p. 172, No. 77, pl. xxii. fig. 3.
,, *aculeus*, G. O. Sars, Moll. Arct. Norv., p. 172, No. 78, pl. ix. fig. 12.
Rissoa (*Onoba*) *striata*, Weinkauff, Conch. Cab. (ed. Küster), p. 154, sp. 37, pl. xix. fig. 2.
Onoba striata, Monterosato, Nomenclatura, p. 67.

February 10, 1873. Tenerife, Canaries. 70 fathoms.

Habitat.—From North America (Gould), Spitzbergen and the Sea of Okhotsk (Jeffreys), to the Mediterranean (Weinkauff, but queried by Monterosato), Madeira and the Selvagens Islands (Watson), and the Canaries (Jeffreys).

Fossil.—From the Pleistocene beds of Norway (Sars), Scotland, and England (Jeffreys).

23. *Rissoa* (*Onoba*) *watsoni*, Schwartz.

Rissoa watsoni, Schwartz v. Mohrenstern, M.S.
" " Watson, Madeiran Rissoæ, Proc. Zool. Soc. Lond., 1873, p. 375, pl. xxxv. fig. 11.
" " Reeve, Conch. Icon., vol. xx. pl. xii. fig. 112.
" " Weinkauff, Conch. Cab. (ed. Küster), p. 174, sp. 89, pl. xxii. figs. 10, 11.

February 10, 1873. Tenerife, Canaries. 70 fathoms.

Habitat.—Madeira (Watson).

The Marquis of Monterosato was in error in identifying *Rissoa simulans*, Monterosato, as this species, but he is perhaps right in his later identification of another closely allied species as *Rissoa watsoni* (Enumeraz., p. 25); however, as I have not seen the Mediterranean shell, I cannot speak to that point.

24. *Rissoa* (*Onoba*) *brachia*,[1] n. sp. (Pl. XLV. fig. 8).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Small, thin, ovate, conical, translucent, umbilicated, with a large rounded tip, convex whorls, an impressed suture, a short round base, a strongly varixed lip, and a round mouth. *Sculpture:* Longitudinals—there are only slight lines of growth. Spirals—there are on the penultimate whorl five remote spiral threads, the three in the middle are prominent and distinct, the one below the suture is feeble, and the lowest is hid in the suture; on the base of the shell they are weak; the parting furrows are twice as broad as the threads; both threads and furrows are very finely fretted with microscopic spiral lines (as in *Rissoa striata*, Adams). *Colour* translucent white. *Spire* very short and stumpy. *Apex* large, round, and glossy, but sparsely dotted with microscopic stipplings, which seem to run in spirals. *Whorls* 4, rounded, of regular increase; the last is tumid. *Suture* scarcely oblique, impressed. *Mouth* round. *Outer lip* sharp, with a strong external varix,

[1] βραχύς, βραχεῖα, short.

patulous. *Inner lip* quite continuous with the outer lip, thin, defined, short on the body, thin, curved, patulous on the pillar, where behind it is a strong furrow and umbilicus, which it half covers. H. 0·051 in. B. 0·41. Mouth, height 0·025, breadth 0·023.

In sculpture this species very much resembles *Rissoa moniziana*, Wats., but is much smaller and stumpier in form, is umbilicated, the base is less produced, and the whorls are rounder.

25. *Rissoa* (*Onoba*) *aëdonis*,[1] n. sp. (Pl. XLV. fig. 5).

Station 135c. October 17, 1873. Lat. 37° 25′ 30″ S., long. 12° 28′ 30″ W. Off Nightingale Island, Tristan da Cunha. 100 to 150 fathoms.

Shell.—Strongish, oblong, conical, subtransparent white, with a blunt rounded tip, subscalar spire, round striated whorls, an impressed suture, a rounded base, an unvarixed lip, and an ovate mouth. *Sculpture:* Longitudinals—there are feeble irregular unequal lines of growth. Spirals—there are strongish distinct spiral threads (about nine on the penultimate whorl), parted by squarish furrows of about double the breadth of the threads; these furrows are exquisitely fretted by very minute close-set microscopic scratches, which give a beautiful crispness to the surface. *Colour* translucent white. *Spire* rather high and subscalar. *Apex* gibbously rounded and smooth, having no sculpture. *Whorls* 5, rounded, the last long and large in proportion to the rest. *Suture* impressed, very slightly oblique. *Mouth* round, but a very little narrowed above. *Outer lip* sharp, thin, well rounded in its whole curve, patulous, with a slightly prominent edge. *Inner lip* thin on the body, but well defined, curved, patulous and appressed on the pillar. H. 0·09 in. B. 0·05. Mouth, height 0·04, breadth 0·033.

The delicate microscopic spiral fretting of this species resembles that which may be seen in *Rissoa striata*, Adams.

26. *Rissoa* (*Onoba*) *mercurialis*,[2] n. sp. (Pl. XLV. fig. 12).

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Off Wednesday Island, Cape York, North-east Australia. 8 fathoms. Coral mud.

Shell.—Large, long, and high, pure white, spirally striate, blunt tipped, convex whorled, with a slightly impressed oblique suture, long body-whorl, produced base, and roundly oval mouth. *Sculpture:* Longitudinals—the whole surface is pretty closely scored with slight unequal lines of growth, some of which are mere scratches, while others are feebly raised and rounded. Spirals—there are on each whorl many small close-set threads and furrows; the threads are flat and very little raised, and the furrows resemble them

[1] ἀηδών, a nightingale.

[2] So called from the island off which it was found.

reversed. *Colour* white, translucent, slightly glossy. *Spire* high narrow and conical. *Apex* blunt, tabulated, the tip, which consists of one minute whorl and a half, being flattened down and immersed, while still encircled with an impressed suture; the first 3 or $3\frac{1}{2}$ whorls are smooth and glossy, and the normal sculpture seems to begin imperceptibly and increase regularly. *Whorls* 7 in all, of regular increase, flatly convex; the last is long, with a full prolonged base. *Suture* oblique, slightly impressed, with the faintest possible constriction round the very top of each whorl. *Mouth* obovate, or slightly pear-shaped, being a little pointed at the top, broadened below. *Outer lip* apparently thickened and expanded, but it has been recently broken, and the restoration is still thin, direct and level on the edge, with a very flat curve till the base is reached, where the curve is rapid, and the edge is expanded and thickened. *Inner lip* concave throughout; on the body spread out with a defined edge, and somewhat thickened; on the pillar, which is long, the edge is patulous, blunt, and scarcely prominent; there is a slight angulation and thickening in front, at the junction with the outer lip. H. 0·152 in. B. 0·065. Mouth, height 0·061, breadth 0·042.

This remarkable species recalls *Odostomia* of the group *Parthenia*, but the apex quite separates it from that genus.

D. Spiralled weakly (*Ceratia*), *i.e.*, in which there are spiral threads, but these not strong.

27. *Rissoa* (*Ceratia*) *glaphyra*,[1] n. sp. (Pl. XLV. fig. 6).

Station 135c. October 17, 1873. Lat. 37° 25′ 30″ S., long. 12° 28′ 30″ W. Off Nightingale Island, Tristan da Cunha. 100 to 150 fathoms.

Shell.—Thin, ovate, conical, hyaline, white, with a blunt rounded tip, convex striated whorls (the body-whorl being slightly tumid), a slightly impressed suture, a rounded base, an unvarixed lip, and a subangulately ovate mouth. *Sculpture:* Longitudinals—on the upper part of the body-whorl, and perhaps of the others, there are very feeble, narrow, flat, sparse riblets. Spirals—the whorls are faintly scored with very slight flat ridges and shallow furrows, but both longitudinals and spirals are so slight that their intersection is scarcely appreciable. *Colour* hyaline, white, and glossy. *Spire* not narrow, conical. *Apex* very blunt, the extreme tip being immersed. *Whorls* 5, convexly conical on the sides, of regular increase, the last a little tumid. *Suture* slightly impressed, little oblique. *Mouth* subangulately ovate, being bluntly pointed above, angulated both at the top and at the point of the pillar. *Outer lip* thin and sharp, above, its curve is very flat; it is slightly patulous on the base. *Inner lip* extremely thin on the body, straight, with a

[1] γλαφυρός, neat.

sharp barely prominent edge, behind which is an extremely obsolete furrow. H. 0·06 in. B. 0·037. Mouth, height 0·027, breadth 0·022.

This species somewhat resembles *Rissoa quisquiliarum*, Wats., but the shape of the whorls, and the form of the apex and mouth are different, as well as the sculpture.

28. *Rissoa (Ceratia) pachia*,[1] n. sp. (Pl. XLV. fig. 7).

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Strongish, ovate, conical, subtransparent, with a smallish rounded tip, convexly conical whorls, a scarcely impressed suture, a produced base, a varixed lip, and a roundly ovate mouth. *Sculpture:* Longitudinals—besides lines of growth, there are feeble, narrow, rounded riblets, which die out on the base. Spirals—the whole surface is scored with feeble rounded threads, parted by faint flat furrows about twice their breadth; the suture is marginated below by a strong rounded thread, defined by a small but distinct furrow; the first $2\frac{1}{2}$ whorls are smooth. *Colour* translucent. *Spire* short, broad, and conical. *Apex* small relatively to the shell, rounded. *Whorls* 5, conically convex on the side; of rapid increase, the last in particular being large and tumid. *Suture* scarcely oblique, very slightly impressed. *Mouth* roundly ovate, narrowed, and bluntly pointed above. *Outer lip* sharp, patulous, with a slight and rather remote varix externally. *Inner lip* thin, defined, straight on the body, sharp-edged, straight and patulous on the pillar, where there is behind it a very small furrow and umbilical chink. H. 0·093 in. B. 0·062. Mouth, height 0·044, breadth 0·039.

This species is not unlike *Rissoa cuchila*, Wats. (=*Rissoa novarensis*, Wats., *nec* v. Frauenfeldt [1]) but is somewhat broader in proportion to length, with a shorter spire, a flatter and less pointed base; the apex is blunter, the whorls more depressed; the outer lip, near its junction to the body, is less roundly arched, being here a little compressed. The sculpture is markedly different, and that on the apex of *Rissoa cuchila* is wanting here, where the apex is quite smooth. *Rissoa turgida*, Jeffr., has a still blunter and more depressed apex, the whorls of the spire are slightly broader, and the last two whorls are smaller; thus the whole shape is different, and in his species the sculpture is more obsolete.

[1] παχύς, παχεῖα, stout.

[2] The identification of my Madeiran species (see Proc. Zool. Soc. Lond., 1873, p. 377, pl. xxxv. fig. 13) with that of v. Frauenfeldt was made on the authority of Baron Schwartz von Mohrenstern, that species being unknown to me; nor was I aware it had been published six years earlier (in the Moll. of the "Novara" Exped., 1867, p. 11). A comparison of his figure (pl. ii. fig. 16) makes it impossible to believe that the two shells can belong to one species. I have accordingly changed the name of the Madeiran shell as above.

29. *Rissoa* (*Ceratia*) *transenna*,[1] n. sp. (Pl. XLV. fig. 9).

Station 145. December 27, 1873. Lat. 46° 43′ S., long. 38° 4′ 30″ E. Between Marion Island and Prince Edward Island. 140 fathoms. Volcanic sand.

Shell.—Rather thin, ovate, conical, translucent, umbilicated, with a large rounded tip, convex whorls, an impressed suture, a short round base, a feebly varixed lip, and a roundly oval mouth. *Sculpture:* Longitudinals—there are scratchy lines of growth, which produce a very slightly reticulated surface. Spirals—there are on the penultimate whorl from five to eight distinct rounded threads, separated by considerably broader furrows, the shoulder below the suture is more or less free of these; the entire surface is also finely fretted with microscopic spiral striolations or scratches; on the two embryonic whorls this entire system of sculpture is replaced by a quite different set of very fine threads, with somewhat broader furrows. *Colour* translucent white. *Spire* rather high, conical. *Apex* large and rounded. *Whorls* 5 to 5½, rounded, of regular increase, but the last is a little large. *Suture* rather broadly and shallowly impressed. *Mouth* open, roundly oval, scarcely narrowed above. *Outer lip* sharp, with an extremely feeble and rather remote varix. *Inner lip* thin, defined, and rather straight across the body, scarcely curved on the pillar, where it is sharp-edged and patulous, with a smallish furrow, and a distinct umbilical chink behind it. H. 0·09 in. B. 0·055. Mouth, height 0·039, breadth 0·031.

This species has a great general likeness to *Rissoa monizïana*, Wats., especially in sculpture, but is larger, has a blunter apex, is umbilicated, and has a much thinner lip and a larger mouth.

30. *Rissoa* (*Ceratia*) *macra*,[2] n. sp. (Pl. XLV. fig. 10).

Station 135c. October 17, 1873. Lat. 37° 25′ 30″ S., long. 12° 28′ 30″ W. Off Nightingale Island, Tristan da Cunha. 100 to 150 fathoms.

Shell.—Strongish, high and narrow, conical, subtransparent white, with a blunt subtruncated rounded tip, convexly conical-sided whorls, a very slightly impressed suture, a convex base, a scarcely varixed lip, and a bluntly pear-shaped mouth. *Sculpture:* Longitudinals—there are unequal lines of growth. Spirals—the whole surface is scored with feeble flat threads, parted by very shallow somewhat broader furrows, faintly fretted by minute microscopic semi-obsolete scratches. *Colour* translucent white. *Spire* very high and narrow. *Apex* ending somewhat abruptly in a flattened rounded tip. *Whorls* 6, subconically convex, the last is long. *Suture* very slightly impressed, rather oblique. *Mouth* bluntly pear-shaped, being broad below and narrowing upwards. *Outer lip* sharp, strengthened by a very feeble varix, patulous. *Inner lip* thin, but defined on the body,

[1] So called from the latticed sculpture.

[2] μακρός, long.

curved, sharp and patulous, but not quite appressed on the pillar, having there a minute furrow behind it. H. 0·09 in. B. 0·042. Mouth, height 0·033, breadth 0·027.

This species faintly recalls *Rissoa striata*, Adams, but is much more elongate. It is very slightly like *Rissoa acdonis*, Wats., in sculpture, but not at all in form.

E. Whorls flat and smooth (*Cingula*).

31. *Rissoa* (*Cingula*) *glabrata* (v. Mühlfeldt).

Helix glabrata, v. Mühlfeldt, Verhandl. Berl. Gesellsch., 1824, vol. i. p. 218, pl. iii. fig. 10.
Rissoa punctulum, Philippi, Enumeratio, vol. i. p. 154, pl. x. fig. 11, and (*Rissoa glabrata*) vol. ii. p. 130, sp. 32.
Cingula glabrata, Weinkauff, Conch. Mittelmeer., vol. ii. p. 280.
Rissoa (*Cingula*) *glabrata*, Aradas and Bénoit, Conch. Mar. Sicil., p. 208, No. 550.
„ *glabrata*, Watson, Madeiran Rissoæ, Proc. Zool. Soc. Lond., 1873, p. 386, pl. xxxvi. fig. 24.
„ (*Nodulus*) *glabrata*, Monterosato, Enumerazione, p. 26.

February 10, 1873. Tenerife, Canaries. 70 fathoms.

Habitat.—Mediterranean (v. Mühlfeldt); Madeira (Watson).

32. *Rissoa* (*Cingula*) *rustica*,[1] n. sp. (Pl. XLIV. fig. 11).

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 30′ W. Off Pernambuco. 350 fathoms. Red mud.

Shell.—Strongish, ovate, conical, white, very obsoletely ribbed or ribless, blunt, round tipped, with flat-sided whorls, a linear suture, a flatly conical base, an unvarixed lip, and a moderate-sized mouth. *Sculpture:* Longitudinals—there are very slight lines of growth, and sometimes extremely obsolete remote rounded ribs on the last whorl. Spirals—there are vague traces of microscopic lines. *Colour* translucent white, with a dull gloss. *Spire* conical, with almost perfectly continuous lines. *Apex* large and rounded; the extreme tip is barely visible in profile. *Whorls* 6, the last two barely convex, the earlier ones quite flat on the sides; the periphery is very obsoletely and roundly angulated, the base short, conical, and barely convex. *Suture* linear, not impressed, very little oblique. *Mouth* moderate, larger in the adolescent than in the full-grown shell, oval, slightly pointed above and at the extremity of the pillar. *Outer lip* sharp, patulous, but a little inverted above. *Inner lip* a very little spread out, but still defined on the body; on the pillar it is straight, sharp, and a little prominent, so as to leave a distinct

[1] Coarse.

though small umbilical furrow behind it. H. 0·12 in. B. 0·064. Mouth, height 0·047, breadth 0·037.

This form somewhat recalls *Barleeia rubra* (Mont.), but is slimmer in form, more glossy, the apex is somewhat larger and blunter, the whorls are less convex, and the suture here is not at all impressed; the inner lip is better defined on the body than in *Barleeia rubra*, and there is a small umbilical furrow.

33. *Rissoa* (*Cingula*) *scopulorum*,[1] n. sp. (Pl. XLV. fig. 4).

July 1875. Reefs off Honolulu, Sandwich Islands. 40 fathoms.

Shell.—Small, fine-pointed, conical, thin, long, narrow, smooth, glossy, rufous brown, with a short flattish base, convex outlined spire, many compressed whorls, a slightly impressed suture, and a small short pear-shaped to rounded mouth. *Sculpture:* Longitudinals—there are a few very obsolete lines of growth. Spirals—there are excessively faint microscopical scratches, and there is a very slight carination at the periphery, which occurs at the base of each whorl; on the first two whorls there are two sharp distinct spiral scratches. *Colour* is a slightly rufous transparent brown or glossy horn colour. *Spire* high and narrow, with somewhat convex outlines. *Apex* small, narrowing very regularly to the extreme tip. *Whorls* 9 in all, short, small, with a slight tendency to project angularly at the bottom; the last has a short, straightly conical to rounded base. *Suture* slight, openly impressed, oblique. *Mouth* small, shortly oval, bluntly pointed above. *Outer lip* thin, regularly curved, descending and inflected above, slightly patulous on the base. *Inner lip* very thin across the body, concave from the insertion of the outer lip to the point of the pillar, on which the edge is patulous, with a very minute chink behind it. H. 0·071 in. B. 0·029. Mouth, height 0·022, breadth 0·015.

This species varies somewhat in the proportion of length to breadth. I have hesitated very much where to put it. In some of its features it resembles *Stilbe* of Gwyn Jeffreys, but that is a genus only newly published, and of its relations and limits I know nothing.

34. *Rissoa* (*Cingula*) *alvearium*, n. sp. (Pl. XLVI. fig. 1).

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Very small, strongish, hive-shaped, convexly conical, slightly umbilicate, white, with a very blunt rounded tip, barely convex whorls, a linear suture, a flatly conical

[1] With a reference to the place of its finding

base, an unvarixed lip, and a round mouth. *Sculpture:* none, but very feeble lines of growth. *Colour* glossy white. *Spire* convexly conical, resembling a somewhat narrow beehive.[1] *Apex* very bluntly rounded, but the largish round tip rises into view. *Whorls* 6, of very regular increase, barely convex; the last is *very* obsoletely angulated at the edge of the base. *Suture* very slight indeed, scarcely oblique. *Mouth* small, subquadrately round, not narrowed above. *Outer lip* thin, slightly contracted above, direct below and hardly curved, subangulated at the corner of the base, patulous on the base. *Inner lip* rather thin, but well defined on the body, deeply concave at the top of the pillar, on which it is thin and expanded, almost concealing the umbilicus and furrow behind it. H. 0·052 in. B. 0·032. Mouth, height 0·018, breadth 0·017.

This species somewhat resembles *Rissoa concinnata*, Jeffr., but has more whorls, and these are not convex, which they are in that species much beyond what the figure (Ann. and Mag. Nat. Hist., June 1883, ser. 5, vol. xi. p. 396, pl. xvi. fig. 2) would convey. In that species, too, there are very fine microscopic close-set superficial spirals, not mentioned in the description, but present in the shell, and entirely absent in *Rissoa alvearium*. In *Rissoa obtusa*, Cantraine, which somewhat resembles both the above, the whorls are conical, flat on the sides, and have a deep sharply contracted suture. In *Rissoa alvearium* they are also conical and flat, but the suture is not at all contracted. In *Rissoa concinnata* they are well rounded, and the deep suture is the result of the meeting curves.

F. Whorls rounded and smooth (*Setia*).

35. *Rissoa* (*Setia*) *albugo*, Watson.

Rissoa albugo, Watson, Madeiran Rissoæ, Proc. Zool. Soc. Lond., 1873, p. 379, pl. xxxv. fig. 17.
„ „ Reeve, Conch. Icon., vol. xx. pl. xii. fig. 114.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 150, sp. 51, pl. xviii. fig. 9.

February 10, 1873. Tenerife, Canaries. 70 fathoms.

Habitat.—Madeira (Watson).

I recognised this as a Canarian species some years ago, having found it among Rissoas from the Canaries, sent me by Mr McAndrew as dredged by himself.

36. *Rissoa* (*Setia*) *callosa*, Manzoni.

Rissoa callosa, Manzoni, Journ. de conch., 1868, vol. xvi. pp. 166, 241, pl. x. fig. 3.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 153, sp. 56, pl. xviii. figs. 14, 15.

February 10, 1873. Tenerife, Canaries. 70 fathoms.

Habitat.—Canaries.

[1] Hence the name.

37. *Rissoa tenuisculpta*, Watson.

Rissoa tenuisculpta, Watson, Madeiran Rissoæ, Proc. Zool. Soc. Lond., 1873, p. 389, pl. xxxvi. fig. 28.
„ (*Pisinna*) *tenuisculpta*, Monterosato, Enumerazione, p. 26.
„ *tenuisculpta*, Jeffreys, "Lightning" and "Porcupine" Moll., Proc. Zool. Soc. Lond., 1884, p. 125, sp. 34.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 148, sp. 49, pl. xviii. figs. 6, 7.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 344. April 3, 1876. Lat. 7° 54′ 20″ S., long. 14° 28′ 20″ W. Ascension Island. 420 fathoms. Volcanic sand.

Habitat.—Madeira, 25 to 50 fathoms (Watson). North-east Atlantic, in from 72 to 1095 fathoms; Mediterranean, Algerine coast, 92 fathoms (Jeffreys).

The apex of the shells from Station 344 is more depressed than in any other specimens I have seen.

A good many examples both of this species and of *Rissoa coriacea*, Manzoni, have come under my notice, and I feel very strongly, as I stated in publishing the species, that the two must be put beside one another as forming a very marked and peculiar group, and that not one of the *Rissoidæ*, but I have not seen anything that would support Dr Gwyn Jeffreys' "inclination to unite these two Madeiran species."

38. *Rissoa* (*Setia*) *marionensis*, n. sp. (Pl. XLIV. fig. 12).

Station 144A. December 26, 1873. Lat. 46° 48′ S., long. 37° 49′ 30″ E. Off Marion Island. 50 to 75 fathoms. Volcanic sand.

Station 145. December 27, 1873. Lat. 46° 43′ S., long. 38° 4′ 30″ E. Between Marion Island and Prince Edward Island. 140 fathoms. Volcanic sand.

Shell.—Thin, ovate, conical, ruddy horny, smooth, with a blunt but conical tip, convex but conical-sided whorls, a slightly impressed suture, a blunt rounded base, an unvarixed lip, and a round mouth. *Sculpture:* with the exception of extremely fine lines of growth, there is none whatever. *Colour* horny, being transparent, fulvous, and more or less glossy, under a thin dull epidermis; the latter part of the last whorl is white and translucent. *Spire* conical. *Apex* bluntly conical, rounded, and pointed. *Whorls* 5; on the sides they are convexly conical; they are of very regular increase. *Suture* slightly impressed, very little oblique. *Mouth* rather large, round. *Outer lip* sharp, patulous but above a very little inverted, at its insertion shortly and slightly parted from the body. *Inner lip:* on the body defined and very short, on the pillar patulous, and having an umbilical furrow and chink behind it. H. 0·074 in. B. 0·044. Mouth, height 0·032, breadth 0·029.

This species is very near *Eatoniella subrufescens*, E. A. Smith, but is, I think, different. In that

the whorls are more rounded, the apex is not conical, but subscalar, and there are minute spiral threads 0·0025 in. apart, of which there are none in any of the specimens of this species. It should be noticed that the presence, partial presence, or absence of the epidermis affects considerably the aspect of this shell.'

39. *Rissoa* (*Setia*) *principis*, n. sp. (Pl. XLIV. fig. 13).

Station 145. December 27, 1873. Lat. 46° 43′ S., long. 38° 4′ 30″ E. Between Marion Island and Prince Edward Island. 140 fathoms. Volcanic sand.

January 9, 1874. Lat. 49° 8′ S., long. 70° 12′ E. Royal Sound, Kerguelen. Shore.

Shell.—Moderately strong, oval, bluntly conical, white, smooth, with a large blunt rounded tip, convex whorls, an impressed suture, a broad rounded base, an unvarixed lip, and a large round mouth. *Sculpture:* the only lines are those of growth, which are hair-like and close. *Colour* white, more or less translucent, under a thin membranaceous yellow caducous epidermis. *Spire* conical; but the profile-lines are much interrupted. *Apex* broad and bluntly rounded. *Whorls* 5, well rounded, of rather rapid but regular increase. *Suture* deeply impressed, scarcely oblique. *Mouth* large, roundly oval. *Outer lip* sharp, patulous all round. *Inner lip* flat and thin on the body, slightly curved, patulous and sharp on the pillar, with an umbilical furrow, but no chink behind it. H. 0·083 in. B. 0·051. Mouth, height 0·038, breadth 0·031.

This is a larger and broader form than *Rissoa marionensis*.

40. *Rissoa* (*Setia*) *australis*, n. sp. (Pl. XLV. fig. 1).

January 9, 1874. Lat. 49° 8′ S., long. 70° 12′ E. Royal Sound, Kerguelen. Shore.

Shell.—Thin, ovate, conical, pale horny, smooth, with a blunt rounded tip, slightly convex whorls, a very slightly impressed suture, a slightly produced rounded base, an unvarixed lip, and a smallish oval mouth. *Sculpture:* except fine lines of growth, there is none. *Colour* pale translucent horny, under a thin yellowish epidermis. *Spire* conical. *Apex* bluntly roundedly conical. *Whorls* 5, with convexly conical sides; the last is long compared with the others. *Suture* slightly impressed, rather oblique. *Mouth* smallish, oval. *Outer lip* sharp, unvarixed, a little contracted, except on the base. *Inner lip* continuously curved, adherent right across the body, sharp and very slightly patulous on the pillar, with a minute furrow, but no chink behind it. *Operculum* oval, subspiral, thin, membranaceous. H. 0·075 in. B. 0·044. Mouth, height 0·031, breadth 0·027.

This species most resembles *Rissoa marionensis*, Wats. The differences are not easily made obvious in words, but the whole style of the shell is different; the form of mouth, of the last whorl, and of apex is diverse, more than the measurements would seem to indicate. I have parted them with very considerable hesitation, but I believe them to be distinct. From *Eatoniella kerguelensis*, E. A. Smith, this species differs in colour, texture, and form of operculum, which is that of a typical *Rissoa*. The radula is also that of the genus, only the centre tooth is a little more cusped and serrated, while the uncini, especially the outer one on either side, are less so than Troschel's figures suggest for the genus.

41. *Rissoa* (*Setia*) *philomelæ*,[1] n. sp. (Pl. XLV. fig. 2).

Station 135c. October 17, 1873. Lat. 37° 25′ 30″ S., long. 12° 28′ 30″ W. Off Nightingale Island, Tristan da Cunha. 100 to 150 fathoms.

Shell.—Thin, ovate, conical, subhyaline white, glossy, with a blunt rounded top, convex whorls, a slightly impressed suture, a rounded base, an unvarixed lip, and an oval mouth. *Sculpture:* none, but slight lines of growth. *Colour* subhyaline white, with a somewhat glossy but not brilliant surface. *Spire* conical. *Apex* bluntly rounded. *Whorls* barely 5; on the sides they are convexly conical: the last two are of somewhat rapid increase. *Suture* slightly impressed, almost horizontal. *Mouth* rather large, oval, barely pointed above. *Outer lip* sharp, direct above, but a little patulous in front. *Inner lip:* on the body thin, but defined; at the pillar slightly reverted, with a small furrow and minute umbilical chink behind it. H. 0·058 in. B. 0·033. Mouth, height 0·027, breadth 0·022.

This species very much resembles *Eatoniella subrufescens*, E. A. Smith, but the spire is narrower, and is not truncated, as in that species, by the sudden abrupt termination of the apex; the texture of the shell, too, is much more delicate.

42. *Rissoa* (*Setia*) *quisquiliarum*,[2] n. sp. (Pl. XLV. fig. 3).

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Shell.—Stout, suboblong, conical, with a blunt rounded tip, very slightly convex whorls, faintly impressed suture, a rounded base, a varixed lip, and an oval mouth. *Sculpture:* none, except very faint lines of growth, a broadish labral varix, and a few (five or six) obsolete spirals on the base. *Spire* rather narrow, conical. *Apex* bluntly rounded.

[1] So called from the island.

[2] I have no intention of stigmatising the species as worthless, but only that the solitary representative I know of it was picked at the last moment out of refuse.

Whorls 5, convexly conical on the sides, of regular somewhat rapid increase. *Suture* very slightly impressed, little oblique. *Mouth* largish, oval, barely pointed above. *Outer lip* sharp, well rounded, patulous on the base, strengthened by a broadish varix. *Inner lip* strongish and defined on the body, curved, with a sharp very slightly prominent edge on the pillar, where there is just barely a furrow behind it. H. 0·06 in. B. 0·4. Mouth, length 0·028, breadth 0·023.

This species is like *Rissoa philomelæ*, Wats., but is stronger in texture, has a narrower spire, a smaller penultimate whorl, a varixed lip, a spiralled base, and no umbilical chink.

43. *Rissoa* (*Setia*) *edwardiensis*, n. sp. (Pl. XLV. fig. 11).

Station 145. December 27, 1873. Lat. 46° 43′ S., long. 38° 4′ 30″ E. Off Prince Edward Island. 50 to 150 fathoms. Volcanic sand.

Shell.—Strongish, conically globose, ruddily horny, smooth, with a blunt rounded tip, convex whorls, an impressed suture, a rounded slightly produced base, an unvarixed lip, and an oval mouth. *Sculpture:* none, except very faint lines of growth. *Colour* dull, ruddy, horny, paling to white at the mouth. *Spire* bluntly conical, with slightly convex profile-lines. *Apex* very bluntly rounded. *Whorls* $4\frac{1}{2}$, convex, the last tumid. *Suture* slightly impressed, barely oblique. *Mouth* largish, oval, barely angulated above, where the outer lip springs from the body at a right angle. *Outer lip* thin, equally curved all round, and slightly patulous. *Inner lip* extremely thin on the body, expanded on the pillar, so as to obscure the furrow and umbilical chink which lie behind it. H. 0·063 in. B. 0·049. Mouth, height 0·032, breadth 0·028.

I have called this a *Rissoa*, because, in the absence of the animal and its operculum, it is impossible to put it anywhere with certainty, but I do not believe it to belong to this genus. It is very like *Assiminea litorina* (Chiaje), but is slightly slimmer, the last whorl is less tumid than in that species, so that a shell of four whorls in this is just about the size of one of three in that; it has no spirals, the top of the mouth is not acute, but only barely angulated; the apex is a little more rounded; the spire a little less scalar; and there is a minute umbilical chink.

44. *Rissoa* (*Setia*) *sinapi*,[1] n. sp. (Pl. XLV. fig. 13).

January 19–20, 1874. Royal Sound, Kerguelen. Shore.

Shell.—Very small, strongish, ovate, ruddily horny, smooth, with a blunt rounded tip, convex whorls, a linear suture, a flatly rounded base, an unvarixed lip, and a round

[1] So called from its small size.

mouth. *Sculpture:* none but very faint lines of growth. *Colour* slightly glossy horny, paling to translucent white toward the mouth. *Spire* conical. *Apex* very bluntly rounded. *Whorls* 4; of rapid but regular increase, convex. *Suture* very slightly impressed, barely oblique. *Mouth* small, almost round. *Outer lip* thin, equally curved all round. *Inner lip* distinct and defined across the body; direct and narrow on the pillar, with a very feeble furrow, but no chink behind it. H. 0·042 in. B. 0·029. Mouth, height 0·019, breadth 0·018.

This species differs from *Rissoa edwardiensis* in that it is very much smaller, is more elongated in form, and has no umbilical chink.

45. *Rissoa* (*Setia*) *triangularis*, n. sp. (Pl. XLVI. fig. 2).

Station 344. April 3, 1876. Lat. 7° 54′ 20″ S., long. 14° 28′ 20″ W. Ascension Island. 420 fathoms. Volcanic sand.

Shell.—Small, triangular, almost equilaterally so, umbilicate, white, with a flattish tip, convex whorls, a slightly impressed suture, a flat oblique rounded base, an unvarixed lip, and a round mouth. *Sculpture:* none, but fine lines of growth, and a carina round the umbilicus. *Colour* white. *Spire* very short, conical, with outlines very slightly convex. *Apex* small, somewhat abruptly flattened, with the extreme tip very bluntly prominent. *Whorls* 4½, of very regular increase, convex, slightly tumid. *Suture* impressed, scarcely oblique. *Mouth* round, but slightly pointed above. *Outer lip* thin, well curved, and slightly patulous all round. *Inner lip* thin and sharp, continuous on the body, a little expanded and arched on the pillar, with a well-marked and margined umbilicus behind it. H. 0·041 in. B. 0·037. Mouth, height 0·021, breadth 0·02.

This species somewhat resembles *Trochus minutulus*, Jeffr., but that shell has not a continuous inner lip; the spire there is higher, the penultimate whorl is broader, more conical, less rounded, the body-whorl is narrower, the base rounder, and the umbilicus is not carinated.

G. Mouth separated from body-whorl (*Scrobs*).

46. *Rissoa* (*Scrobs*) *scrobiculator*, n. sp. (Pl. XLVI. fig. 4).

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Shell.—Small, rather strong, elongately obovate, brilliant, crimson-chestnut, with a narrow spire, few laterally flattened whorls, a small rounded tip, a large horizontally set mouth occupying the whole base, and a furrowed[1] double lip. *Sculpture:* there are many very oblique hair-like lines of growth, and there are, especially on the last whorl, close-set

[1] Hence the name.

microscopic furrows, which are a little less obsolete above and below than they are in the middle. *Colour* a brilliant crimson chestnut, but translucent white all round the mouth. *Spire* high and narrow, with convex profile-lines. *Apex* small, roundly and bluntly pointed; the extreme tip, which is not small relatively, is barely raised; the first two whorls are covered with rather remote minutely microscopic stipplings, which are arranged in spiral rows. *Whorls* 4½; the first three are small and conical, the last is long and cylindrical, with hardly convex sides, and no base, except the outer lip, which crosses the end from side to side, and abruptly truncates the shell. *Suture* barely impressed, and chiefly recognisable from the through-shine of the whorls. *Mouth* large, gibbously round; it lies almost transverse to the axis, and is encircled all round by a broadish furrow, which lies between the outer and inner edge of the continuous lip. *Outer lip* freely curved, very broad, with a thinnish outer and inner edge, between which a rounded furrow is hollowed. *Inner lip* almost horizontal, crossing the entire front of the body from side to side, so as to leave no pillar at all; a little curved: a level shelf, broad above and slightly narrowing forward, separates it from the body; in this shelf is hollowed the circumoral furrow, which widens into a small triangular depression at the insertion of the outer lip. H. 0·044 in. B. 0·017. Mouth, outside, height 0·017, breadth 0·015; inside, height 0·011, breadth 0·013.

This is a very exceptional form. *Rissoa glabrata* (v. Mühlf.), has, in a less degree, somewhat of the peculiar lip and mouth here present. The double lip, though not quite unknown among the Rissoas, appears here in a most singular and exaggerated form.

47. *Rissoa* (*Scrobs*) *badia*, n. sp. (Pl. XLVI. fig. 3).

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Shell.—Small, strong, oval, smooth, lustrous, furvous chestnut,[1] with a broad oblique base, a short spire, few laterally flattened whorls, a blunt rounded tip, and a smallish mouth, thrust out to the right from the body. *Sculpture:* there are very many slight lines of growth, and fine, rather distant, microscopic spiral furrows, which are least obsolete round the top of the whorls and on the base. *Colour* a dark translucent dirty chestnut, with a lustrous surface.[2] *Spire* short, with conical, barely convex profiles. *Apex* blunt and rounded, the extreme tip being barely raised; the first whorl and a half are *very* finely and closely stippled in rather distant microscopic spiral lines. *Whorls* 4½; the first three are broadly conical, with slightly convex outlines; the last is tumid, with a short, conical, hardly rounded base, from which the mouth is projected out to one side. *Suture* rather distinctly impressed. *Mouth* gibbously semicircular, rather small: it lies

[1] Hence the name.

[2] In some lights it is iridescent, but that is probably accidental.

rather transversely to the axis of the shell, and is separated from the body by a broad shelf, in which is sunk a deep furrow interrupted at either end, for it is crossed to the right by the outer lip running on from the mouth-corner to join the body-whorl, and to the left it is crossed by a narrow rounded swelling from the axis. *Outer lip* bluntly rounded on the edge, which projects freely all round the mouth with a slight opercular ledge a little way within; it is not patulous, but on the contrary is rather slightly contracted; the direction of the outer lip, from its insertion, is at first straight forward and outward; it then curves freely all round to its junction with the inner lip. *Inner lip* long, very oblique, almost straight, having only a little bend at either end; it is blunt, but hardly thick; behind it, and separating it from the body, is a strange, deep, wide, very oblique furrow, from the middle of which opens an almost hidden poriform umbilicus. H. 0·064 in. B. 0·043. Mouth, height 0·021, to insertion of outer lip, 0·027; breadth 0·022.

This curious species has obvious connections with *Rissoa scrobiculata*, Wats., but is very obviously different in shape, colour, and in the details of the slightly similar mouth. The stippled lines of the embryonic apex are more exquisitely delicate here than in that other. I had thought of suggesting for these very singular Australian forms a genus *Scrobs*, but think it better to class them as I have done. Both have manifestly relations with *Rissoa glabrata* (v. Mühlf.).

2. *Hydrobia*, Hartmann, 1821.

Hydrobia caliginosa (Gould).

Litorina caliginosa, Gould, U.S. Expl. Exped., 1852, p. 198, pl. xiv. fig. 240.
Hydrobia caliginosa, E. A. Smith, Phil. Trans. vol. 168, 1879, p. 7 (separate impression), pl. ix. fig. 8.
„ „ Studer, Fauna Kerguelensland, Archiv Naturgesch., 35th Year., vol. i. p. 129, No. 32.

January 19–20, 1874. Royal Sound, Kerguelen. Shore.

Habitat.—Tierra del Fuego (Gould); Kerguelen (E. A. Smith and Studer).

In this species the epidermis is very thick and strong, while the shell is peculiarly weak.

3. *Eatoniella*, Dall, 1876.

Mr Dall published this genus in 1876 (Bull. U.S. Nat. Hist. Mus., vol. iii. p. 42), but Mr E. A. Smith had described it the year before Mr Dall (Ann. and Mag. Nat. Hist., 1875, ser. 4, vol. xvi. p. 70), under the name *Eatonia*, which, however, being preoccupied, gives place, as Mr Smith has recorded, to Mr Dall's. In regard to the operculum which is the feature of distinction between this genus and that of *Rissoa*, Mr Smith, remarking on Mr Gwyn Jeffreys' description of the similar operculum in *Jeffreysia*, says that the ossicle in *Eatoniella* is directed towards the *inner* margin, while in *Jeffreysia*, as he understands Mr Gwyn Jeffreys' description (and that in opposition to his figure), the ossicle proceeds from the *outer* margin. The misunderstanding, however, vanishes if it be observed

that Mr Gwyn Jeffreys, in the words "proceeds from the outer margin," does not by margin signify face; and further only means that the ossicle projects beyond the edge in a general way, not using outer in opposition to *columellar*.

In addition to Mr Smith's careful description, it may be well to record that the teeth of the genus do not seem to differ materially from those of *Rissoa*. It is true that the sketch of them which I made for my own use omits the small outmost or third tooth on either side, but such an oversight is apt to occur in the case of specimens preserved in spirit and not examined with special care.

Species.

1. *Eatoniella caliginosa*, E. A. Smith. 2. *Eatoniella subrufescens*, E. A. Smith.

1. *Eatoniella caliginosa* (E. A. Smith).

Eatonia caliginosa, E. A. Smith, Ann. and Mag. Nat. Hist., 4th ser., July 1875, vol. xvii. p. 7.
Eatoniella caliginosa, Dall, Bull. U.S. Nat. Mus., 1876, vol. ii. p. 43.
" " E. A. Smith, Moll. Kerguelen, Phil. Trans. Roy. Soc. Lond., vol. 168, 1879, p. 9 (separate impression), pl. ix. fig. 9.
" " Studer, Fauna Kerguelensland, Archiv f. Naturgesch., 35th year, vol. i. p. 129, No. 36.

January 19 20, 1874. Royal Sound, Kerguelen. Shore.

Habitat.—Kerguelen (E. A. Smith).

2. *Eatoniella subrufescens* (E. A. Smith).

Eatonia subrufescens, E. A. Smith, Ann. and Mag. Nat. Hist., 4th ser., 1875, vol. xvii. p. 71.
Eatoniella subrufescens, E. A. Smith, Moll. Kerguelen, Phil. Trans. Roy. Soc. Lond., vol. 168, 1879, p. 9 (separate impression), pl. ix. fig. 11.
" " Studer, Fauna Kerguelensland, Archiv Naturgesch., 35th year, vol. i. p. 129, No. 37.

Station 149B. January 17, 1874. Lat. 49° 28′ S., long. 70° 30′ E. Off Royal Sound, Kerguelen. 25 fathoms. Volcanic mud.

Habitat.—Kerguelen (E. A. Smith).

It may be worth noticing that this shell is scored with microscopic spiral lines, of which on the body-whorl there are about six to the $\frac{1}{10}$th inch.

4. *Rissoina*, d'Orbigny, 1840.

Species.

1. *Rissoina chesnelii* (Mich).
2. *Rissoina cincta*, Angas.
3. *Rissoina dubiosa* (C. B. Adams).
4. *Rissoina miranda*, A. Adams.
5. *Rissoina reticulata* (?) (Sow).
6. *Rissoina triticea*, Pease.
7. *Rissoina scalariformis*, n. sp.
8. *Rissoina triangularis*, n. sp.
9. *Rissoina mercurialis*, n. sp.
10. *Rissoina honoluluensis*, n. sp.
11. *Rissoina transenna*, n. sp.

1. *Rissoina chesnelii* (Michaud).

Rissoa chesnelii, Michaud, Les Rissoa (2d ed.), p. 17, sp. 12, single plate, figs. 23, 24 (published July 12, 1830).
„ „ Michaud, Ann. Soc. Linn. Lyon, 1836, vol. i.
„ „ Potiez and Michaud, Moll. Gallerie Douai, vol. i. p. 267, sp. 6.
„ „ Lamarck, Anim. s. vert. (ed. Desh.), vol. viii. p. 483, sp. 38.
„ *scalarella*, C. B. Adams, Proc. Bost. Soc. Nat. Hist., 1845, vol. ii. p. 6.
„ *catesbyana*, d'Orbigny, Moll. Cuba, 1853, vol. ii. p. 24, pl. xii. figs. 1–3.
Rissoina catesbyana, Fischer, Coq. Guadaloupe, Revue coloniale, 1857, p. 16, sp. 1.
Rissoina chesneli, Schwartz von Mohrenstern, Monog. Rissoina, p. 73, pl. v. figs. 38, 39.
Rissoa catesbyana, Reeve, Conch. Icon., vol. xx. pl. x. fig. 94.
„ *chesneli*, Reeve, Conch. Icon., vol. xx. pl. x. fig. 89
Rissoina chesneli, v. Martens, Moll. Mauritius, &c., p. 285.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 11, sp. 7, pl. iv. figs. 19–21.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—West Indies (Michaud); Jamaica (Adams); Mauritius and all the Antilles (Schwartz v. Mohrenstern); Ceylon, Nicobars, and the Malay Archipelago (v. Martens).

I have given the habitat of this species as the writers who may be supposed well informed have stated it. That they are correct I cannot believe, the less so when in Baron Schwartz von Mohrenstern's monograph on the genus we find the following:—

Rissoina Burdigalensis (d'Orbigny), a fossil from Bordeaux, Northern Italy, and Vienna; lives at Mauritius, p. 51. (Professor v. Martens puts a query to this, p. 284.)
Rissoina costata, A. Adams, living in Peru, is also said to live on the Philippines (while Deshayes attributes it to Réunion, and v. Martens to the islands of the Malay Archipelago, the Nicobars, and Ceylon).
Rissoina angula (C. B. Adams), a Jamaican species; is said to live also in the Red Sea, and at Mauritius (a fact which v. Martens queries, p. 285).
Rissoina scalariformis (C. B. Adams), a Panama species, lives at Mauritius (and is further ascribed by v. Martens to the Red Sea and Polynesia).
Rissoina pusilla (Brocchi), a Subapennine fossil; is ascribed to Mauritius and the Sandwich Islands.
„ *conifera*, Montague, a West Indian species; is ascribed to Mauritius (a fact v. Martens queries).
„ *Bryerea* (Mont.), a West Indian species; is ascribed to Mauritius (a fact queried by v. Martens).
„ *reticulata*, Sowerby, the same.
„ *decussata* (Mont.), a West Indian species; is attributed to Panama, the Mediterranean, the East Indies, and fossil to Rhodes, Sicily, Corinth, Vienna, and Bordeaux.
Rissoina cancellata (Philippi), a Cuban species; is ascribed to Bolivia and the Philippines.

These are statements so very remarkable, especially when taken in the aggregate, in reference to a shallow-water genus, not, like the Tritons, given to wandering in its embryonic state, that they call for the very fullest and most severe investigation, which, unfortunately, Baron Schwartz von Mohrenstern has not given them, being content to speak vaguely of sea-currents from the Antarctic Ocean as explaining their distribution. Professor v. Martens was not called on, by the nature of his work, to discuss them, and has been content to guard himself by some marks of interrogation, but it is obvious that the whole matter must yet be subjected to very full revision before such facts of distribution can be accepted.

2. *Rissoina cincta*, Angas.

Rissoina cincta, Angas, New Austral. Shells, Proc. Zool. Soc. Lond., 1867, p. 114, pl. xiii. fig. 22.
„ „ Reeve, Conch. Icon., vol. xx. pl. viii. fig. 71.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 87, sp. 117, pl. xv.d. fig. 11.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Port Jackson, deep water (Angas).

3. *Rissoina dubiosa* (?) (C. B. Adams).

Rissoa dubiosa, C. B. Adams, Contrib. to Conch., April 1850, vol. i., p. 114.
Rissoina dubiosa, Schwartz v. Mohrenstern, Monog. Rissoina, p. 67, sp. 33, pl. iv. fig. 31.
„ „ Weinkauff, Conch. Cab. (ed. Küster), p. 27, sp. 30, pl. ix. figs. 4, 5.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Habitat.—Jamaica (Adams); Cuba, Jamaica, St Thomas (Schwartz).

This is a somewhat stumpy and close-ribbed form, but belongs, I think, to this species.

4. *Rissoina miranda* (A. Adams).

Rissoa miranda, A. Adams, Ann. and Mag. Nat. Hist., 3d ser., 1861, vol. viii. p.135.
Rissoina miranda, Weinkauff, Conch. Cab. (ed. Küster), p. 69, pl. xv.a. fig. 8, pl. xv.d. fig. 3.
„ „ Dunker, Index Moll. Mar. Japon., p. 118.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, North-east Australia. 28 fathoms. Green mud.

Habitat.—Japan.

Weinkauff's quotation (*loc. cit. supra*) of this species from "Bourbon, Mauritius, Ceylon, Bombay, Arakan, and Singapore," seems based on its identification with *Rissoina insolita*, Desh. (which in the Conch. Cab. always appears as *insolida*), an identification which, however probable, is not accepted by Weinkauff himself, who gives both species as distinct. Von Martens, who quotes the latter species (Meeresfauna Mauritius, &c., p. 286) for Mauritius and Bourbon, makes no reference to Adams' species.

5. *Rissoina reticulata* (?) (Sowerby).

Rissoa reticulata, Sowerby, Genera of Shells, vol. ii. pl. 208, fig. 1.
„ „ Reeve, Conch. Syst., p. 152.
„ *princeps*, C. B. Adams, Contrib. to Conch., p. 116.
Rissoina reticulata, Schwartz v. Mohrenstern, Rissoina, p. 74, sp. 41, pl. v. fig. 40.
„ *princeps*, Mörch, Mal. Blätter, 1876, p. 47.
Rissoa reticulata, Reeve, Conch. Icon., vol. xx. pl. viii. fig. 75.
Rissoina reticulata, Weinkauff, Conch. Cab. (ed. Küster), p. 30, sp. 34, pl. x. fig. 2.
„ „ v. Martens, Meeresfauna Mauritius, &c., p. 285.

September 8, 1874. Flinders Passage, Cape York, North-east Australia. 7 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud.

Habitat.—The Philippines, Indian Ocean, and West Indies (v. Martens).

This species is marked with a note of doubt, for there are some features of very marked distinction between the solitary Challenger specimen and Sowerby's species; in particular, there is a very great and sudden narrowing, lowering, and multiplication of the ribs on the last whorl, a feature notably present in *Rissoina andamica*, Nevill. The shell is also much smaller than *Rissoina reticulata*, Sow., but size hardly reckons in this very variable genus, and Sowerby's species, in particular, presents great differences, both in size and sculpture.

6. *Rissoina triticea*, Pease.

Rissoina triticea, Pease, Proc. Zool. Soc. Lond., 1860, p. 438.
Rissoa triticea, Reeve, Conch. Icon., vol. xx. pl. xi. fig. 102.
Rissoina triticea, Weinkauff, Conch. Cab. (ed. Küster), p. 72, sp. 93, pl. xv.b. fig. 3.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Pacific Ocean (Pease); Andamans, Ceylon, Aden, Mauritius (Nevill); Red Sea (Sickeli).

7. *Rissoina scalariformis*, n. sp. (Pl. XLVI. fig. 6).

July 1875. Reefs off Honolulu, Sandwich Islands. 40 fathoms.

Shell.—Very high and narrow, conical, scalar, obliquely ribbed and very faintly spiralled, with a tall sharp apex, shortish whorls, an impressed suture, and a short broad rounded base, which in front is minutely constricted and bordered with a fine cord. *Sculpture*: Longitudinals—the whorls are crossed by narrow, raised, sharp, fine, rather remote straightish riblets, which, continuing to the base, run down the spire from whorl to whorl, a little obliquely toward the left; of these there are on the last whorl 12 or 13; the last forms a distinct but not powerful varix round the mouth. Spirals—the interstices of the ribs are scratched with very faint little furrows; round the point of the base is a sharp furrow and cord. *Colour* white. *Spire* high and narrow, with very slightly convex profile-lines, scalar. *Apex* consists of four smooth embryonic whorls, forming a tall conical top, of which the suture is very slightly impressed, and the extreme tip is minute, prominent, and rounded. *Whorls* $8\frac{1}{2}$ in all; they are rather short, shouldered above, below the suture convex, but a little irregularly so. *Suture* very oblique, broadly impressed. *Mouth* almost semicircular, small, nearly direct. *Outer lip* sinuated above at its junction and at the point of the pillar, between which with an advancing and sharp but varixed edge it curves equably round. *Inner lip* strong, and spread out on the

body, across which, with an oblique course, it runs nearly straight, not truncating the pillar, but narrowing it to a point. H. 0·098 in. B. 0·034. Mouth, height, outside 0·031, inside 0·028; breadth, outside 0·029, inside 0·019.

This is a remarkably elegant species, with none of the contortion of the genus; it has more of the aspect of a *Scalaria* than any of its congeners.

8. *Rissoina triangularis*,[1] n. sp. (Pl. XLVI. fig. 7).

September 8, 1874. Flinders Passage, near Cape York. 7 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Off Wednesday Island, Cape York, North-east Australia. 8 fathoms. Coral mud.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Off Cape York, North-east Australia. 6 fathoms. Coral mud.

Shell.—Narrow, long, square in front, white, ribbed and spiralled, with a high spire, a small rounded top, convex whorls, an impressed suture, a contracted base, a very long pillar, a varixed triangular mouth, and very peculiar outer lip. *Sculpture:* Longitudinals—there are on each whorl 12 or 13 rather narrow, little raised, rounded, oblique, widely parted ribs, which are feeble at the suture, and die out on the base; they are parted by wide shallow furrows of from three to four times their breadth. Spirals—the whole surface is scored with fine rounded threads, parted by shallow furrows of about three times their breadth, and also by very minute superficial spiral scratches, which give a frosted look to the shell. *Colour* white, with a slight tinge of ochre. *Spire* high and narrow, conical, with scarcely convex profile-lines. *Apex* is small, but ends rather abruptly in a flatly tabulated top, on which the extreme rounded tip just rises into view; the first three whorls are embryonic, and are quite smooth. *Whorls* 8, convex, short, and narrow, only the last being of any size, and it but small, having a very contracted rounded base. *Suture* rather strongly contracted, and very horizontal. *Mouth* large, having almost the shape of a right-angled triangle, the whole inner lip forming the hypotenuse, and the right angle lying at the outer corner of the base. *Outer lip* runs forward very straight from its insertion to the outer corner of the base, where it turns nearly at a right angle, and runs almost straight across to the point of the pillar; its two parts are nearly equal: this straight long line across the front of the shell is a very peculiar feature; the sinus at either end of the lip is small and shallow, but that at the front of the pillar is extremely angular; the sharp but strong front edge is very sinuous, and on the base especially is very prominent; the external varix is narrow, but well marked. *Inner lip* carried straight by a thin pad from the insertion of the outer lip to the point of the pillar, which, though insignificant in the mouth, projects long and straight from the base. H. 0·15 in. B. 0·055. Mouth, height 0·048, breadth 0·038.

[1] So called from the shape of the mouth.

Two or three species, but especially *Rissoina artensis*, Montrouz., present somewhat of the same character of mouth and basal lip as this species, but none so strongly as it does.

9. *Rissoina mercurialis*,[1] n. sp. (Pl. XLVI. fig. 8).

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York, North-east Australia. 8 fathoms. Coral mud.

Shell.—Rather high and narrow, conical, obliquely ribbed, feebly spiralled, with a tall, small, bluntly rounded apex, rather rounded whorls, an impressed suture, and a short broad rounded base, which in front is minutely constricted and bordered with a strongish cord. *Sculpture:* Longitudinals—the whorls are crossed by strongish but not high rounded ribs, parted by rather wider furrows, which run down the spire from whorl to whorl a little obliquely; they persevere to the base; of these, on the last whorl there are about 15, the last forming a strongish rounded varix on the back of the lip. Spirals —very fine microscopic scratches fret the whole surface, with distant very slight threads, of which the three on the base are strongish; the constriction round the point of the base is small, but not narrow; the cord in front is strongish, and is scored by the longitudinal ribs. *Colour* white. *Spire* rather high and narrow, subscalar, with faintly convex profile lines. *Apex* small, consisting of two depressedly tumid smooth embryonic whorls, of which the extreme tip forms a minute flat dome. *Whorls* 8½ in all, somewhat high and narrow, convex in outline, being contracted above and below; the last is rather long, and has a full round base. *Suture* impressed, slightly constricted on the upper whorls, very little oblique, but somewhat more so below. *Mouth* pear-shaped, little oblique, pointed above, produced into a runnel below. *Outer lip* scarcely sinuated above, but hollowed into a strongish gutter below; its edge is nearly level and thin, being bevelled off from the outside, where the strongish varix makes it pretty thick; its direction above is nearly straight; across the base it curves freely. *Inner lip* barely concave; it is carried by a thinnish pad obliquely across the body to the point of the pillar, which is very faintly toothed, but not truncated in front. H. 0·16 in. B. 0·067. Mouth, height 0·058 breadth 0·044.

The small produced rounded tip of this species is very characteristic. The specimens vary in size.

10. *Rissoina honoluluensis*, n. sp. (Pl. XLVI. fig. 9).

July 1875. Reefs off Honolulu. 40 fathoms.

Shell.—A little high and narrow, conical, rather straight ribbed, very feebly spiralled, with a somewhat truncated spire, a minute subconical apex, shortish subconical whorls,

[1] So called from the island.

slightly and linearly impressed suture, a largish somewhat obliquely set pear-shaped mouth, with a straight conical base, which is not constricted, and has a very feeble swelling in front. *Sculpture:* Longitudinals—the whorls are crossed by distinct, but rather feeble rounded, straightish ribs, parted by shallow furrows of about their own breadth; they run on from whorl to whorl, and continue to the point of the base, where they bend suddenly to the right; of these, on the last whorl, there are about 15, the last forming a strongish rounded varix on the back of the lip. Spirals—the whole surface is very finely microscopically scratched, and the intervals of the ribs are microscopically scored with fine rather distant threads, which become distinct on the base. *Colour* white. *Spire* not very high nor narrow; the profile-lines are slightly convex. *Apex* rather abruptly contracted and small pointed, the small extreme tip rising a very little on one side; it consists of three conically globose whorls, which are microscopically ornamented with about six spiral rows of minute white tubercles. *Whorls* 6; besides those of the embryo, the earlier whorls increase very slowly, but the last three markedly, and are rather high and somewhat convex, the base is rather short and obliquely conical. *Suture* slightly impressed, and a little oblique. *Mouth* oval, oblique, prolonged into a gutter above, but only a little angulated below. *Outer lip* thick, with a strongish varix, bevelled off to a sharp nearly level edge; it has a small sinus above, but almost none at all below; it has a pretty full curve throughout. *Inner lip* rather thin, with a slight thickening at the very short pillar; it is concave throughout, and at the tip of the pillar joins the outer lip with rather a quick bend. H. 0·145 in. B. 0·048. Mouth, height 0·057, breadth 0·039.

This species is superficially like *Rissoina mercurialis*, but is more oblique, the mouth being larger and more thrown out to one side; there is no constriction round the base, and the cord in front is feebler; the apex in particular is much less attenuated, though the precise tip is more pointed and the embryonic whorls more numerous. Other points of distinction may be noticed in the description of the two species.

11. *Rissoina transenna*,[1] n. sp. (Pl. XLVI. fig. 10).

July 29, 1874. Levuka, Fiji. 12 fathoms.

Shell.—High, narrow, conical, sharply finely reticulated, with a small protracted apex, short whorls, a broadly and squarely impressed suture, and a short rounded base, drawn in by a furrow and a small sharp thread in front. *Sculpture:* Longitudinals—there are about 12 to 14 fine sharpish remote ribs, which run down the spire continuously from whorl to whorl to the point of the base, distinctly crossing the suture; in direction slightly oblique to the right; the last forms a strongish varix on the lip-edge. Spirals—there are on the penultimate whorl four, on the last there are six rather close-set rounded threads, which form small tubercles in crossing the riblets; the individual meshes of the network

[1] Thus called from the sculpture.

thus formed are short and broad; in the suture, but on its lower side, is a very small sharpish threadlet, below which is a very short drooping shoulder without threads, but scored by the riblets; round the extreme point of the base is a little shallow furrow, in crossing which the riblets rise high and sharp; beyond the furrow is a slightly swollen thread scored by the riblets. *Colour* white. *Spire* high and narrow, and toward the apex drawn out. *Apex* somewhat broken, but small, and composed of several smooth convex whorls. *Whorls* (remaining) $7\frac{1}{2}$, short, of slow increase, convex; the last has a short roundly contracted base. *Suture* in itself indistinguishable, but well marked by the contraction of the whorls and the sutural furrow; it is little oblique. *Mouth* gibbously oval, pointed but hardly sinuated above, but with a rather strong, roundly hollowed, and somewhat oblique gutter truncating the pillar. *Outer lip* thick and strong, but bevelled from without to a fine level edge; its direction is nearly straight for half its course, when it curves round obliquely to the gutter edge, where it is hollowed out roundly. *Inner lip* rather thinly continuous across the body, slightly concave in passing over into the short stumpy pillar, whose profile lines are triangular. H. 0·13 in. B. 0·055. Mouth, outside of lip, height 0·05, breadth 0·047; inside, height 0·033, breadth 0·031.

This species belongs to the group of the sharply reticulated Rissoinas, and has something of the style of *Rissoina sagrayana*, d'Orb., or *Rissoina media*, Schwartz. Than *Rissoina nitida*, A. Adams, it is much smaller, and is much more sharply and more sparsely ribbed. *Rissoina fusca*, Gould, from Hong Kong, lacks the furrow and fold round the point of the pillar.

5. *Fenella*, A. Adams, 1864.

Mr Adams considers this genus most nearly connected with *Rissoa* (subgenus *Alvania*); but his description of the animal hardly justifies this estimate; and, so far as I am aware, its true place is undetermined.

Fenella elongata, Watson (Pl. XXXIV. fig. 4).

Fenella elongata, Watson, Prelim. Report, pt. 7, Journ. Linn. Soc. Lond., vol. xv. p. 249.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. Off San Miguel, Azores. 1000 fathoms. Volcanic mud.

Shell.—Small, high, narrow, conical, translucent white, with deep wide suture and rounded whorls and base. *Sculpture:* Longitudinals—on the last whorl there are 12 to 13 narrow and sharply-rounded, but not high, ribs, parted by furrows about four times their width; they cross the whorls with a slight obliquity, and are abruptly interrupted on the last whorl by the edge of a basal tabulation, where the entire base is levelled up to the summit of the ribs, which thus all but disappear. On the earlier whorls the ribs are rather fewer in number, and are somewhat closer set; on the third they are

crowded, on the second and first they are absent. There are besides these very numerous, close-set, rounded, microscopic threads on the lines of growth; these, as usual, are most distinct on the base. Spirals—there are on each whorl three very narrow rather prominent threads, which rise into tubercles in crossing the longitudinal ribs. The highest, which is the strongest, is about two-fifths of the whorl's height below the suture, the costal tubercles on it are sharp and prominent, and it forms a distinct though not strong carina; on the last whorl the edge of the basal tabulation, which exactly meets the outer lip, forms a fourth thread, and between all the spirals there is a faint trace of one intermediate, like a shadow; on the tabulation of the base there are three or four very feeble and faint rounded threads. *Colour* glossy, transparent white. *Spire* very high and narrow, perfectly conical, but having its outlines broken by the strong sutural contractions which constrict the top and bottom of each whorl. *Apex* small and regularly attenuated, but blunt and quite round, the extreme tip being slightly turned in. *Whorls* 12½, of very gradual and regular increase; with a sloping shoulder below the suture, they bulge roundly and contract slightly into the suture below; the projection of the spiral threads gives the curve of the whorls a slight angulation, which is strongest at the carinal or highest of the three threads; the base is rounded and scarcely at all projecting. *Suture* lies in the bottom of a deep and broad angular constriction, and is well marked above by a minute round thread. *Mouth* small, gibbously oval, slightly pointed above and in front of the pillar. *Outer lip* thin, advancing very little at its junction with the body, and there a little contracted, slightly patulous in all the rest of its sweep. *Pillar* very perpendicular, concave and narrow. *Inner lip* is carried across the body as a thin glaze; it spreads out a very little just at the top of the pillar, down which it advances with a very narrow and slightly angulated, but not at all reverted edge. H. 0·36 in. B. 0·1. Penultimate whorl, height 0·05. Mouth, height 0·05, breadth 0·048.

This is a little shell of remarkable beauty. Its generic place has been very difficult to determine. Its outer lip is a little chipped, which has added to the difficulty. There are none of the microscopic spirals which characterise *Turritella*. There is no such siphonal canal as would justify its being classed as a *Cerithium*. The longitudinal sculpture separates it from *Mesalia*. Mr Edgar A. Smith recommended *Fenella*, where it is now placed, because nothing more satisfactory suggests itself. Mr A. Adams' diagnosis of the genus (Ann. and Mag. Nat. Hist., 1864, vol. xiii. p. 40; Journ. de conch., 1868, p. 47, pl. iv. fig. 5) "... labro simplici, acuto, non reflexo, incrassato aut varicoso," implies that the outer lip is not reflected, but is *either* thickened *or* varicose. In none of the species described is this feature mentioned; and Mr E. A. Smith writes to me that among the Fenellas of the British Museum, "of which we have several species and many specimens, I do not find any thickening or varix on the labrum." It seems probable, therefore, that Mr Adams' thought was "non reflexo, incrassato nec varicoso," and that "aut" slipped in by accident and transformed his meaning. Still, a slight difficulty remains, since the aperture is not quite "*integra antice*," as the old lines of growth indicate, in spite of the chipped lip; but the indication of an "emargination" is too slight, as is said above, to allow the shell being placed under *Cerithium*.

6. *Scaliola*, A. Adams, 1860.

Species.

1. *Scaliola arenosa*, A. Adams. 2. *Scaliola bella*, A. Adams.
3. *Scaliola caledonica*, Crosse.

1. *Scaliola arenosa*, A. Adams (Pl. XLVI. fig. 11).

Scaliola arenosa, A. Adams, Ann. and Mag. Nat. Hist., 1862, 3d ser., vol. x. p. 421.
„ „ A. Adams, Journ. de conch., 1868, vol. xvi. p. 53, sp. 2.
„ „ Dunker, Index Moll. Mar. Japon., p. 121.

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Raine Island, Cape York, Torres Strait, North Australia. 155 fathoms. Coral sand.

September 7, 1874. Torres Strait. 3 to 11 fathoms.

September 8, 1874. Flinders Passage, Cape York. 7 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Near Cape York. 6 fathoms. Coral mud.

July 1875. Reef off Honolulu, Sandwich Islands. 40 fathoms.

Habitat.—Japan (Adams).

I do not know this species, except from the diagnosis, and thought the Challenger species must be distinct, as having no approach to an "umbilical chink," but only a slight prominence of the pillar lip-edge, and as not having the "suture deep." M. Crosse, of the Journal de conchyliologie, too, who possesses specimens of the species and kindly examined those of the Challenger, shared my opinion, and regards this as a new species; but Mr Edgar A. Smith, on comparison with Adams' types, assures me that those I sent him for examination are the same as Adams' species. I have therefore adopted his estimate.

The presence of this and the other species which follow at Honolulu is interesting, as no locality so far east has been recorded hitherto to my knowledge.

2. *Scaliola bella*, A. Adams.

Scaliola bella, A. Adams, Ann. and Mag. Nat. Hist., 1860, 3d ser., vol. vi. p. 120, and 1862, vol. x. p. 420.
„ „ A. Adams, Journ. de conch., 1868, vol. xvi. p. 53, pl. iv. fig. 6.
„ „ Dunker, Index Moll. Mar. Japon., p. 121.

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ W. Tongatabu (inside the reef), Fiji. 18 fathoms. Coral mud.

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Raine Island, Cape York, North Australia. 155 fathoms. Coral sand.

September 7, 1874. Torres Strait, North Australia. 3 to 11 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Near Cape York. 6 fathoms. Coral mud.

July 1875. Reef off Honolulu, Sandwich Islands. 40 fathoms.

Habitat.—Japan, 2½ to 25 fathoms (Adams).

3. *Scaliola caledonica*, Crosse.

Scaliola caledonica, Crosse, Journ. de conch., 1870, p. 299, and 1871, p. 200, pl. vi. fig. 3.

September 7, 1874. Torres Strait, North Australia. 3 to 11 fathoms.

September 8, 1874. Flinders Passage, Cape York. 7 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Near Cape York. 6 fathoms. Coral, sand.

July 1875. Reef off Honolulu, Sandwich Islands. 40 fathoms.

Habitat.—The shore near Noumea, New Caledonia.

Mr Crosse kindly compared the Challenger specimens with his own types of this species, and writes, May 17, 1881—"Très voisin du *Scaliola caledonica*, Crosse, dont il reproduit à peu près complétement la forme générale et dont il n'est peut-être bien qu'une variété *minor*. Pourtant il en diffère par sa taille au moins du double plus petite et son ouverture proportionnellement un peu moins grande. Il y a réellement différence entre les deux formes mais est-elle assez tranchée pour justifier la séparation en deux espèces?"

In the face of such an estimate, the union of the two forms seemed the safest course. The shape is totally unlike that of the two other species already mentioned from the same localities, though of course the superficial resemblance is strong, as it is always apt to be between small allied forms.

7. *Skenea*, Fleming, 1828.

Skenea subcanaliculata, E. A. Smith.

Skenea subcanaliculata, E. A. Smith, Ann. and Mag. Nat. Hist., July 1875, ser. 4, vol. xvi. p. 71, No. 9.

" " E. A. Smith, Phil. Trans., 1877, vol. 168 (separate impression), p. 9, pl. ix. fig. 15.

" " Studer, Fauna Kerguelensland, Archiv f. Naturgesch., 35th year., vol. i. p. 129, No. 34.

January 19–20, 1874. Royal Sound, Kerguelen. Shore.

Habitat.—Kerguelen Island, 7 fathoms.

Order OPISTHOBRANCHIA, Milne-Edwards, 1848.

Family TORNATELLIDÆ, Fleming, 1828.

Genera. 1. *Actæon*, Montfort. 2. *Aplustrum*, Schumacher. 3. *Ringicula*, Deshayes.

1. *Actæon*, Montfort, 1810.

Montfort's name for this genus precedes Lamarck's *Tornatella* by two years. In regard to the genus *Actæonina*, d'Orb., which from my view-point is better regarded as a subgenus, some confusion has prevailed. *Acteocina*, Gray (Proc. Zool. Soc. Lond., 1847, p. 160), may be set aside at once; it is a name and no more. *Actæonina* was proposed by d'Orbigny in 1847 (Palæont. Franç., vol. ii. p. 162), and again in 1850 (Prodrome, vol. i. pp. 118, 353), and was intended for some fossil forms, regarding which any one desirous of further information may consult Morris and Lycett, Mollusca, from the Great Oolite, Palæont. Soc., 1850, vol. i. p. 102, pl. v. figs. 11, 12, and pl. xviii. figs. 14, 15; Supplement Palæont. Soc., 1863, pp. 26–28, 106, 107, pl. xxxi. figs. 9–13 (*per err.* 16); also Pictet, Paléontologie, 2d ed., vol. iii. pp. 102–106, pl. lx. figs. 13–22; also Chenu, Manuel, vol. i. p. 225.

Deshayes, in his Animaux sans vertèbres du bassin de Paris, vol. ii. p. 613, substitutes for *Actæonina* the name *Orthostoma* as of earlier date. Agassiz in the Index Universalis (Soleure edition, p. 764), quotes for this name "Gray, Moll. 1840" (syn. Brit. Mus.), but the name *Orthostoma* belongs to Conrad (see Geol. Report, New York, p. 115), 1838, and was proposed for a "genus Nautileorum," a fact which, of itself, would exclude it from rivalry with *Actæonina*, apart altogether from the consideration that the name had been already proposed in 1831 by Ehrenberg for a genus of Vermes, and by Serville, in 1834, for some of the Coleoptera.

The forms embraced in this subgenus seem somewhat miscellaneous, but the Challenger shells may quite safely come under the convenient definition of Pictet (*loc. cit. supra*), "Les *Acteonina* —leur forme normale est celle d'actæons sans dents."

Species.

1. *Actæon exilis*, Jeffr.
2. *Actæon flammeus* (Gmelin).
3. *Actæon globulinus* (Forbes).
4. *Actæon pusillus* (Forbes).
5. *Actæon turritus*, Wats.
6. *Actæon australis*, Wats.
7. *Actæon amabilis*, Wats.
8. *Actæon* (*Buccinulus*) *affinis* (A. Adams).
9. *Actæon* (*Buccinulus*) *insculptus* (Reeve).
10. *Actæon* (*Buccinulus*) *niveus*, Angas.
11. *Actæon* (*Buccinulus*) *cinereus*, Wats.
12. *Actæon* (*Acteonina*) *edentulus*, Wats.
13. *Actæon* (*Acteonina*) *chariis*, Wats.

1. *Actæon exilis*, Jeffreys.

Actæon exilis, Gwyn Jeffreys, Medit. Moll., Ann. and Mag. Nat. Hist., 1870, ser. 4, vol. vi. p. 85.
" " Gwyn Jeffreys, "Valorous" Dredgings, Ann. and Mag., &c., 1877, ser. 4, vol. xix. p. 335.
" " Monterosato, Enumerazione, p. 51.

Actæon exilis, Gwyn Jeffreys, "Travailleur" Dredgings, Brit. Assoc. Report, 1880, p. 10, No. 178.
„ „ Seguenza, Formaz. Terz. Calabria, p. 251.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Habitat.—Mediterranean, 92 to 1465 fathoms; Bay of Biscay, 227 to 994 fathoms; North Atlantic, 227 to 1456 fathoms (Jeffreys).

Fossil.—From the Middle Pliocene of Calabria (Seguenza).

I have not seen Professor Verrill's *Actæon nitidus* (Cat. N. Eng. Mar. Moll., p. 540, pl. lviii. fig. 21), but, judging by his figure, and knowing how admirable these figures generally are, I strongly suspect that his species is the same as this of Dr Jeffreys.

2. *Actæon flammeus* (Gmelin).

Martini, Conch. Cab., vol. ii. p. 122, pl. xliii. fig. 439.
Voluta flammea, Gmelin, Syst. Nat., p. 3435, No. 2 (var. excl.)
Bulimus variegatus, Bruguière, Encycl. méthod., vers, vol. i. p. 336, sp. 67, pl. cccclii. fig. 1 (*Tornatella flammea*).
Voluta flammea, Dillwyn, Catalogue, vol. i. p. 564, sp. 12.
„ „ Wood, Ind. Test., p. 97, pl. xix. fig. 12.
Tornatella flammea, Lamarck, Anim. s. vert., vol. vi. p. 219, and (ed. Desh.) vol. ix. p. 39, sp. 1.
„ „ Sowerby, Genera, vol. ii. pl. cxcv. fig. 1.
„ „ Kiener, Iconog., p. 1, pl. i. fig. 1.
Actæon flammeus, A. Adams, Monog. Actæon, &c., Proc. Zool. Soc. Lond., 1854, p. 59, sp. 2.
Tornatella flammea, Reeve, Conch. Icon., vol. xv. pl. i. fig. 2.
Actæon flammeus, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1878, vol. ii. p. 75, No. 8.
Tornatella flammea, v. Martens, Moll. Mauritius, &c., p. 303.

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ W. Off Nukalofa (inside the reef), Tongatabu. 18 fathoms. Coral mud.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. Off south-west point of Papua. 28 fathoms. Green mud.

Habitat.—East Africa and Mauritius (v. Martens); Torres Strait, North-east Australia, and Papua, 8 fathoms (Brazier); Java and the Philippines (Reeve).

The young shell of this species has an umbilical chink, which, in the form from Station 188, is retained in a way not usual in the adult.

3. *Actæon globulinus* (?) (Forbes).

Tornatella globulina, Forbes, Brit. Assoc. Report, 1843, Ægean Inverteb., p. 191.
Actæon globulinus, Monterosato, Enumerazione, p. 50.
" " Seguenza, Formaz. Terz. Calabria, p. 251.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. Off San Miguel, Azores. 1000 fathoms. Volcanic mud.

Habitat.—Ægean Sea, 0 to 95 fathoms (Forbes); Mediterranean, 92 fathoms (Monterosato).

Fossil.—Middle Pliocene, Calabria (Seguenza).

The specimen obtained from this station is only a fragment, and cannot, therefore, be considered as quite satisfactorily determined, the more so that the peculiar spiral sculpture is never a very constant feature. Forbes describes the shell as with whorls "simplicibus." This is not strictly true, the whorls being minutely stippled, though in some cases the stippling is very faint. In the Challenger specimen, which includes the whole body-whorl and mouth, the stippling is exceptionally strong, but I believe the fragment belongs to this species.

4. *Actæon pusillus* (?) (Forbes).

Tornatella pusilla, Forbes, Brit. Assoc. Report, 1843, Ægean Inverteb., p. 191.
Actæon pusillus, Gwyn Jeffreys, Medit. Moll., Ann. and Mag. Nat. Hist., 1870, ser. 4, vol. vi. p. 84.
" " Gwyn Jeffreys, Brit. Assoc. Presid. Address, 1877, p. 5 (separate impression).
" " Gwyn Jeffreys, Italian Exped. Medit. Moll., Ann. and Mag. Nat. Hist., July 1882, ser. 5, vol. viii. p. 34.
" " Monterosato, Enumerazione, p. 50.
" " Seguenza, Formaz. Terz. Calabria, p. 251.

Station 23. March 15, 1873. Lat. 18° 24′ N., long. 63° 28′ W. Off Sombrero Island, West Indies. 450 fathoms. Pteropod ooze.

Habitat.—Ægean Sea, 0 to 100 fathoms (Forbes); Mediterranean, 40 to 1456 fathoms (Jeffreys); Palermo and San Vito, 90 to 210 fathoms (Monterosato); Madeira, 20 to 50 fathoms (Watson).

Fossil.—Middle Pliocene, Calabria (Seguenza).

The solitary specimen got by the Challenger is a mere fragment, and cannot be considered as very certainly identified. Compared with the types in the British Museum, it has the spirals much more numerous, and the apex is depressed. Dr Gwyn Jeffreys assures me that the species is probably the *Tornatella depressa*, Libassi, and is certainly=*Actæon noæ* (J. Sow.). This opinion I have at present no means of examining; if it be correct, of course Sowerby's name, which dates from 1822, has priority.

5. *Actæon turritus*, Watson (Pl. XLVII. fig. 2).

Actæon turritus, Watson, Prelim. Report, pt. 18, Journ. Linn. Soc. Lond., vol. xvii. p. 285.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Strongish, oblong, pale yellow, translucent, somewhat glossy, with a high conical coarsely tipped spire and rounded striated whorls. *Sculpture:* Longitudinals—there are many feeble lines of growth. Spirals—the surface of the shell is scored with narrow, shallow, irregular, unequal, distant furrows formed by hardly continuous stipplings, which are round on the upper and oblong on the last whorl; between these furrows there often occurs a weaker one formed in the same way; on the base they are small and crowded; toward the upper suture they are strong; on the first in particular they are so. *Colour:* the shell itself is translucent white, but is covered with a very thin yellow membranaceous epidermis. *Spire* high, conical, and scalar. *Apex* very coarse and blunt, slightly immersed, but not inverted. *Whorls* 6, rounded above, cylindrical below; the last is short and slightly tumid. *Suture* very little oblique, strong and somewhat channelled. *Mouth* oval to pear-shaped. *Outer lip* leaves the body at a right angle; it is regularly arched throughout, patulous in front. *Inner lip:* a thin defined glaze crosses the body and runs direct down the pillar with a straight sharp edge, behind which is a minute chink; the tooth, which is close up to the body, is very slight and blunt. H. 0·31 in. B. 0·18. Penultimate whorl, height 0·08. Mouth, height 0·17, breadth 0·1.

This species is represented by only one specimen, of which the outer lip is somewhat broken. The spire is extremely high and scalar. In this respect, and in the rounded form of the whorls, it somewhat resembles *Actæon* (*Solidula*) *suturalis*, A. Adams; but the apex is much blunter, and the sculpture much finer than in that species.

6. *Actæon australinus*, Watson (Pl. XLVII. fig. 3).

Actæon australinus, Watson, Prelim. Report, pt. 18, Journ. Linn. Soc. Lond., vol. xvii. p. 286.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

Shell.—Small, thin, ovate, strongly striated, with a high conical spire, blunt tip, and tumid body-whorl. *Sculpture:* Longitudinals—the lines of growth are very faint and somewhat markedly oblique. Spirals—the whole surface is scored with strong equal furrows which are about half the breadth of the interstices: these furrows are not stippled, but are delicately and regularly cut across on the lines of growth by fine threads: there are about 20 of these furrows on the body and about 9 on the penultimate whorl. *Colour* porcellanous, with a glossy surface. *Spire* rather high, conical, subscalar. *Apex* rather

large, blunt and flattened, with a very slight inversion of the extreme tip. *Whorls* nearly 5, very little convex; the last is rather large and somewhat tumid. *Suture* rather oblique, slight, scarcely impressed. *Mouth* oval, pointed above, a little oblique in its direction. *Outer lip* sharp and thin, with its edge crenulated by the sculptural spirals; in direction it is straight above, well curved on the base, where it is very slightly emarginate. *Inner lip:* very slightly convex on the body, it passes gradually into the short concave pillar, at the base of which there is only the faintest trace of a tooth; its edge is sharp and patulous, with a minute chink behind it. H. 0·18 in. B. 0·1. Penultimate whorl, height 0·06. Mouth, height 0·11, breadth 0·07.

This species slightly resembles *Actæon pusillus* (Forbes), from the Mediterranean and North Atlantic; but the spirals in that species are stronger, and are pit-marked; the suture is much stronger and more channelled, and the body-whorl is more barrel-shaped.

7. *Actæon amabilis*, Watson (Pl. XLVII. fig. 4).

- *Actæon amabilis*, Watson, Prelim. Report, pt. 18, Journ. Linn. Soc. Lond., vol. xvii. p. 287.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of Azores. 1000 fathoms. Pteropod ooze. Bottom temperature 39°·4 F.

Station 85. July 19, 1873. Lat. 28° 42′ N., long. 18° 6′ W. Off Palma, Canaries. 1125 fathoms. Volcanic mud.

Shell.—Small, ovate, white, with flattened whorls, a subscalar spire, a very blunt apex, a pear-shaped smallish mouth, and a very slight tooth on the pillar. *Sculpture:* Longitudinals—there are very faint hair-like lines of growth. Spirals—there are on the last whorl about 20, on the penultimate whorl about 8 rather strong and equal furrows stippled with roundish-oval pits; they become more crowded and weaker toward the middle of the base: just below the suture the first furrow is minutely and slightly beaded, and it with the next one or two is strong and these are crowded; the flat surface which parts them is somewhat broader than the furrows. *Colour* translucent and subglossy white. *Spire* conical, high, scarcely scalar. *Apex* blunt and truncated; the extreme tip is a very little inverted. *Whorls* 5, very slightly shouldered just below the suture: round the top there is a very feeble constriction; below this the whorl is conical, and in profile flat on the sides; the last whorl is a very little tumid with a produced base. *Suture* very little oblique, strongish and well marked, but not channelled. *Mouth* pear-shaped, pointed above, a little oblique in direction, patulous or very slightly guttered in front of the pillar point. *Outer lip* straight and parallel to the axis, and a little contracted above, arched and patulous in front. *Inner lip* slightly convex on the body, on which there is a thin but distinct glaze with a defined edge. There is a slight angulation at the junction of the body and the pillar, near the top of which is a very faint tooth amounting to no

more than a slight swelling; the pillar itself is very slightly oblique, and is straight, narrow, with a sharp edge, behind which is a very slight and shallow furrow. H. 0·16 in. B. 0·1. Penultimate whorl, height 0·04. Mouth, height 0·08, breadth 0·05.

This species is a little like *Actæon austrinus*, Watson; but compared to that the form is slimmer, the whorls are more laterally compressed and less convex, the shell is smaller, and the apex is more truncated. It a good deal resembles *Actæon levidensis*, S. Wood, but has a shorter body-whorl and mouth; the rise of the whorls in the spire is more scalar, and the apex is stumpier, with a coarser tip.

8 *Actæon* (*Buccinulus*) *affinis* (A. Adams) (Pl. XLVII. fig. 1).

Solidula affinis, A. Adams, Monog. on Actæon, &c., Proc. Zool. Soc. Lond., 1854, p. 61, sp. 7.
Buccinulus affinis, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 225, No. 250.
" " Brazier, Proc. Linn. Soc. New South Wales, 1878, vol. ii. p. 77.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—China Seas, New Ireland, Borneo, Philippines (Adams); Torres Straits, 25 to 30 fathoms; New Ireland, washed up after gales; Port Jackson, 2 to 15 fathoms (Brazier); Port Essington, Morton Bay (British Museum); also Japan (Angas).

Mr Edgar A. Smith ("Alert" Collections, p. 86) considers this a small form of *Actæon solidulus* (Linne). They seemed to me fairly distinct. I do not know what is Mr. Angas' authority for ascribing this species to Japan. Dunker does not give it in his Japan Index.

9. *Actæon* (*Buccinulus*) *insculptus* (?) (Reeve).

Tornatella insculpta, Reeve, Monog. of Tornatella, Proc. Zool. Soc. Lond., 1842, p. 62, sp. 12.
" " Reeve, Conch. Icon., vol. xv. pl. iii. fig. 15.

September 8, 1874. Flinders Passage, Torres Strait. 7 fathoms.

Habitat.—Masbate in the Philippines (Reeve).

The solitary specimen of this species is in a very bad state of preservation, and the determination cannot be regarded as very certain.

10. *Actæon* (*Buccinulus*) *niveus*, Angas.

Buccinulus niveus, Angas, New Austral. Shells, Proc. Zool. Soc. Lond., 1871, p. 19, pl. i. fig. 27.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Port Jackson (Angas).

11. *Actæon* (*Buccinulus*) *cinereus*, Watson (Pl. XLVII. fig. 5).

Actæon (*Buccinulus*) *cinereus*, Watson, Prelim. Report, pt. 18, Journ. Linn. Soc. Lond., vol. xvii. p. 288.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Shell.—Strong, oblong, pointed at both ends, white, with three spiral bands of cindery spots; a high, conical, sharp-pointed spire, barely convex spirally striated whorls, a slight suture, a long narrow mouth emarginate in front, and a strongly twisted double-toothed pillar. *Sculpture:* Longitudinals—there are fine, approximate, hair-like, obsolete lines of growth. Spirals—there are shallow square-cut furrows formed of small contiguous oval pit-marks: of these there are on the penultimate whorl about 8, on the body about 25; the flat raised surface of the shell between is from one to three times as wide as the furrows. On the first two whorls these furrows are wanting; on the third whorl only one appears close below the suture. *Colour* porcellanous and glossy white, with three narrowish grey bands, made up of small, cindery, somewhat longitudinally arranged spots: these bands, absent on the earlier whorls, first make their appearance on the fifth, from which to the seventh there is only one band immediately above the suture; its upper edge is somewhat indefinite, flame-like expansions of it extending upwards here and there. On the body another similar band occurs at the periphery; and a third is on the base, originating just above the upper pillar-tooth; the two latter are more defined than the first: the cindery spots forming these bands are entirely absent in the furrows. *Spire* short and conical. *Apex* small and sharp, the minute tip being distinctly prominent and not in the least twisted or inverted. *Suture* slight, being scarcely impressed; in the earlier whorls it is very horizontal, but latterly it is oblique. *Mouth* long, narrow, curved-in toward the axis of the shell, sharply pointed above, channelled in front of the pillar point. *Outer lip* sinuated above; the lip-edge is roundly prominent at the periphery, where it is patulous, hardly curved, and in direction oblique. On the base it is extremely patulous, a little pointed, very curved and retreating; at the point of the pillar it is very strongly emarginate. *Inner lip:* the glaze on the body is not very thick, and has a defined edge which does not extend beyond the mouth; near the point of the base it is swelled into a small, narrow, blunt, oblique tooth, and at the point of the pillar it forms a very strong, twisted, oblique double tooth which dies out very speedily, and does not connect itself with the mouth-edge; the furrow above the double tooth is very strong. H. 0·4 in. B. 0·14. Penultimate whorl, height 0·06. Mouth, height 0·28, breadth 0·08.

This pretty little species is very like *Actæon* (*Buccinulus*) *glaber* (Reeve), but has a higher and sharper spire, a much feebler, less channelled suture, and lacks the sculpture on the upper whorls, which in *Actæon* (*Buccinulus*) *glaber* are harshly pitted up to the very apex. These three smooth apical whorls are very peculiar, and distinguish the Challenger species from *Actæon* (*Buccinulus*) *strigosus* (Gould), from Japan, the coarse apex of which is strongly sculptured. In that species, too, the upper

tooth on the pillar is very feeble.[1] My note on the British Museum *Buccinuli* was that some of them seemed not well individualised, especially in the case of the various specimens of *Actæon glaber* (Reeve), *Actæon affinis* (A. Adams), and *Actæon fumatus* (Reeve), and, further, that *Actæon cinereus*, Wats., seemed to agree with two specimens of *Actæon glaber* on different tablets, the one from Fiji, the other from "Sandy Cape." Mr Edgar A. Smith, who kindly compared the species for me, confirms this opinion. Writing on May 2, 1882, he says, "We have this shell marked *Actæon glaber*, var., from Japan; but it is probably distinct from that species."

12. *Actæon* (*Actæonina*) *edentulus*, Watson (Pl. XLVII. fig. 6).

Actæon edentulus, Watson, Prelim. Report, pt. 18, Journ. Linn. Soc. Lond., vol. xvii. p. 284.

Station 149c. January 19, 1874. Lat. 49° 32′ S., long. 70° E. Balfour Bay, Royal Sound, Kerguelen. 60 fathoms. Volcanic mud.

Shell.—Fragile, ovate, white, with a thin chestnut-coloured epidermis, a bluntish scalar spire, a largish mouth, inner lip untoothed. *Sculpture:* Longitudinals—there are very many close-set minute lines of growth, with here and there one much stronger than the rest which cuts in like a fault on the spirals, interrupting their continuity. Spirals—there are many regular, but not sharp-cut nor stippled furrows which corrugate even the interior surface of the shell: about 70 of these are on the body-, about 20 on the penultimate whorl. They are strongest toward the middle of the body-whorl, and somewhat faint toward the upper suture; the flat surface between them, which is about thrice their breadth, is more or less distinctly scored by a very faint furrow. *Colour* opaque white, covered with a thin glossy chestnut-coloured epidermis, which is a little darker below the suture and on the base. *Spire* rather high, roundedly and bluntly conical, scalar. *Apex* slightly eroded, but evidently blunt, large, and slightly inverted. *Whorls* 5½, somewhat convex, of rather rapid but regular increase; the last is long and cylindrical, with a rounded produced base. *Suture* oblique, strong; axially impressed rather than channelled. *Mouth* long, transversely pear-shaped, narrowing very gradually above, open and rounded below. *Outer lip* a little patulous above, a good deal so on the base: it rises from the body-whorl at a right angle, but immediately bends downwards and runs forward to the base quite straight and parallel to the axis; across the base it is slightly emarginate. *Inner lip:* a thin narrow glaze crosses the body and borders the pillar, which is narrow and concave, with a rounded, slightly twisted, and feebly marginated edge. There is no tooth. H. 1 in. B. 0·5. Penultimate whorl, height 0·2. Mouth, height 0·65, breadth 0·31.

This fine species is represented by only one somewhat broken specimen.

[1] This observation of mine seems not to agree with that of Lischke, who in his Japanische Meeres-Conchylien, 2d vol., p. 104, pl. v. figs. 13, 14, says, "von den beiden Falten der Spindel ist die obere mässig." As he describes the lower one, however, as "sehr kräftig," one may recognise from his figure that both expressions rather exaggerate the features they describe, and that his description of the upper tooth as "massig" is not materially different from my "feebler."

13. *Actæon* (*Acteonina*) *chariis*, Watson (Pl. XLVII. fig. 7).

Actæon (?) *chariis*, Watson, Prelim. Report, pt. 18, Journ. Linn. Soc. Lond., vol. xvii. p. 288.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. Off San Miguel, Azores. 1000 fathoms. Volcanic mud.

Shell.—Small, ovate, thin, translucent white, with flatly rounded whorls, a short subscalar very bluntly tipped spire, a largish roundish mouth, sinuated outer lip, and edentulous pillar. *Sculpture:* Longitudinals—there are numerous, unequal, sinuous hair-like, obsolete lines of growth. Spirals—the whole surface is scored with flattish rounded threads and shallow furrows of half their breadth between; these become feeble in the middle of the whorls; the furrows are not stippled. *Colour* translucent white and glossy. *Spire* conical, scarcely scalar. *Apex* extremely blunt, being suddenly truncated and flattened; the extreme tip is very slightly inverted. *Whorls* 4½, constricted above, flatly rounded in the middle, and very faintly constricted below; the last is a very little tumid, with a rounded and slightly produced base. *Suture* strong, slightly oblique, impressed and slightly channelled. *Mouth* roundly pear-shaped, very bluntly pointed above. *Outer lip:* there is a strong shallowish and wide sinus above; below this the lip-edge (straight in its direction) is prominent, with a very slight emargination on the patulous and rounded base-line. *Inner lip:* an excessively thin and narrow glaze crosses the body, which is scarcely convex; the line of junction with the pillar and out to the point of the shell is roundly concave: the lip-edge on the pillar is narrow and sharp, and there is behind it a small furrow. H. 0·1 in. B. 0·05. Penultimate whorl, height 0·02. Mouth, height 0·05, breadth 0·03.

This species is very slightly like *Actæon exilis*, Jeffr., still more *Actæon bovetensis*, Seguenza, but is obviously different from both.

2. *Aplustrum*, Schumacher, 1817.

Aplustrum scabrum (Chemnitz).

Bulla scabra, Chemnitz, Conch. Cab., vol. x. p. 118, pl. cxlvi. figs. 1352, 1353.
„ „ Dillwyn, Catalogue, vol. i. p. 484, sp. 28.
„ „ Wood, Ind. Test., p. 93, pl. xviii. fig. 28.
„ „ Lamarck (ed. Desh.), vol. vii. p. 677, sp. 21.
„ „ Sowerby, Thes. Conch., vol. ii. pt. 2, p. 563, sp. 1, pl. cxx. fig. 1.
Bullina scabra, Reeve, Conch. Icon., vol. xviii., single pl., sp. 1.
Bulla lauta, Pease, New Moll. Sandwich Islands, Proc. Zool. Soc. Lond., 1860, p. 19, No. 2.
Bullina lineata, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 225, No. 254.
„ „ ? Hutton, Manual, p. 120.
„ *scabra*, v. Martens, Moll. Mauritius, &c., p. 303.
„ „ Dunker, Index Moll. Mar. Japon., p. 163.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
April 26, 1874. Port Jackson, Sydney. 4 to 18 fathoms.

Habitat.—Java (Chemnitz); Sandwich Islands (British Museum and Pease); Japan (Reeve); Port Jackson (Angas); Mauritius, Polynesia (v. Martens).

I have no doubt that the Challenger specimens agree with shells marked *Aplustrum scabrum*, Chem., in the British Museum, and that *Aplustrum lautum* (Pease), there, is also the species of Chemnitz. I have therefore without hesitation quoted Mr Angas' *Bullina lineata* from Port Jackson, which he identifies with the species of Pease and doubtfully with that of Chemnitz. Whether he is right in regarding his shells as really the *Bulla lineata*, Wood, I cannot say, and I have therefore forborne to quote that author (Ind. Test., p. 209, Suppl. pl. iii. sp. 1). My own impression, however, is that Mr Angas is right, and, further, that the *Bullina undata* of Adams, Genera, vol. ii. p. 8, "Shell" pl. lvi. fig. 5.a. (which, both in letterpress and in the explanation of the plate, has got sadly mixed up with a *Bullina undata*, ascribed by Adams to Chiaje's Poli, vol. iii. pl. xlvi. fig. 29, where no such species exists), is also this same species. Whether the *Bulla undata*, Brug.=*Bullina elegans*, Menke, is really distinct from *Bulla scabra*, Chem., as Deshayes maintains, is of course a totally different question, on which, not having Bruguière's species within reach, I offer no opinion. The *Bulla scabra*, Müller, to which Deshayes (Anim. s. vert., 2d ed., vol. vii. p. 677), refers, is, of course, the *Philine* of that name.

Mr Angas (*loc. cit. supra*) says that this species of Chemnitz has the operculum of an *Actæon*.

3. *Ringicula*, Deshayes, 1858.

Species.

1. *Ringicula doliaris*, Gould.
2. *Ringicula pusilla*, Wats.
3. *Ringicula assularum*, Wats.
4. *Ringicula peracuta*, Wats.

1. *Ringicula doliaris*, Gould (Pl. XLVII. fig. 8).

Ringicula doliaris, Gould, Proc. Boston Soc., 1860, vol. vii. p. 324.
„ „ Gould, Otia, 1862, p. 121.
„ „ Morelet, Journ. de conch., 1878, vol. xxvi. p. 126.
„ „ Dunker, Index Moll. Mar. Japon., p. 58.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
April 23, 1874. Port Jackson, Sydney. 6 to 15 fathoms.

Habitat.—Japan.

Gould observes that this species is peculiar from its thin lip and general want of callus. The Challenger shells are somewhat less tumid than the British Museum specimens, want the round swollen shoulder below the suture, the upper whorls, too, are flatter, and the spire is rather higher; in all these respects, however, the species presents considerable range of variation, and I believe may fairly admit the Challenger specimens. The Marquis de Folin, who has a large acquaintance with this genus, kindly examined all the Challenger specimens for me, and I regret that he does not share my opinion regarding the shells under consideration here, which he holds to represent a new species.

2. *Ringicula pusilla*, Watson (Pl. XLVII. fig. 9).

Ringicula pusilla, Watson, Prelim. Report, pt. 18, Journ. Linn. Soc. Lond., vol. xvii. p. 290.

September 7, 1874. Torres Strait, North-east of Australia. 3 to 11 fathoms.
September 8, 1874. Flinders Passage, Torres Strait. 7 fathoms.
September 8, 1874. Wednesday Island, Torres Strait. 8 fathoms.

Shell.—Minute, ovate, subelongate, pointed, spirally striate from end to end, with slightly canaliculate and submarginated suture, and a large mouth. *Sculpture:* Longitudinals—there are very slight hair-like lines of growth. Spirals—the whole shell is scored with strongish deepish distant furrows, which are rather more remote above than below the periphery; the first one below the suture is a little stronger than the others. *Colour* glossy translucent white. *Spire* rather high, conical, regular, scalar. *Apex* small, rounded, the small tip being a very little prominent. *Whorls* 5, subcylindrical, slightly convex, the penultimate is rather high. *Suture* canaliculate and submarginated. *Mouth* large, the teeth being small, suboblique. *Outer lip* somewhat obliquely drawn in and produced on the base, where it is round, patulous, and slightly sinuated; about the middle it is prominent and toothed; above it is narrowly and shallowly sinuated close to the body. *Inner lip* rather thinly and narrowly thickened, with a small tooth in the middle; the two pillar-teeth are oblique, parallel, and nearly equal, the lower being the larger. H. 0·067 in. B. 0·038. Mouth, height 0·034, breadth 0·027.

This species resembles *Ringicula goujoni*, De Folin, more than any I know; but the shell is shorter here, with a lower spire and a less exserted tip. The suture in that species is very much less canaliculate, the mouth is smaller, and the spirals are much less numerous and are more remote.

3. *Ringicula assularum*,[1] Watson (Pl. XLVII. fig. 10).

Ringicula assularum, Watson, Prelim. Report, pt. 18, Journ. Linn. Soc. Lond., vol. xvii. p. 291.

September 8, 1874. Flinders Passage, Torres Strait. 7 fathoms.

Shell.—Small, somewhat lozenge-shaped, the left slope of the spire and the right base, the right slope of the spire and the left base being roughly parallel, smooth and without spiral furrows, with an obtuse spire, a small but blunt apex, and a mouth much contracted by the callus of the lips. *Sculpture:* Longitudinals—there are very slight rounded lines of growth. Spirals—none, except one feeble furrow toward the front of the base. *Colour* glossy white, with a faint bluish tinge. *Spire* short, conical, very slightly subscalar. *Apex* very small, rounded, prominent, and a little elevated on one side. *Whorls* 5, conical, convex; the first, which is very small, is a little depressed, but at its origin stands

[1] *Pace* Captain Flinders, I have allowed myself to borrow from Plautus's rendering "*facere assulas foribus*" of our idiomatic English phrase, "to knock the door in *flinders*."

up prominent on one side; the last, viewed as the shell lies on its face, is two-thirds of the whole length. *Suture* strongly marked, but not impressed, nor canaliculate nor marginated. *Mouth* small, oblique, very much narrowed by the teeth of both lips. *Outer lip* very much thickened, with a large prominent blunt tooth on the inner side above the middle: there is a shallow sinus above at the junction of the lip with the body, and a very small one at the point of the pillar. *Inner lip:* there is a thick toothed pad on the body; of the two pillar-teeth, the lower, though stronger, is slightly less prominent than the upper. H. 0·11 in. B. 0·07. Mouth, height 0·064, breadth to outside of callus on both lips, 0·058.

This species is not unlike a small *Ringicula auriculata*, Ménard de la Groye; but the spire is more depressed, the apex is slightly flatter, and the extreme tip is hardly so small.

4. *Ringicula peracuta*, Watson (Pl. XLVII. fig. 11).

Ringicula peracuta, Watson, Prelim. Report, pt. 18, Journ. Linn. Soc. Lond., vol. xvii. p. 292.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze?

Station 56. May 29, 1873. Lat. 32° 8′ 45″ N., long. 64° 59′ 35″ W. Off Bermudas. 1075 fathoms. Coral mud. Bottom temperature 38°·2 F.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco, 350 fathoms. Red mud.

Shell.—Ovate, with a somewhat high conical small-pointed spire, smooth and glossy. spirally furrowed below the periphery, with a marginated suture and a largish mouth. *Sculpture:* Longitudinals—the whole surface is pretty regularly scored with distinct, but not sharp, shallow furrows on the lines of growth. Spirals—just below the suture is a fine furrow fictitiously strengthened by the shining through of the superior whorl; from the periphery to the point of the base there are rather remote spiral furrows, which seem to vary as usual in number and in distinctness. *Colour* glossy white, with a faint bluish tinge. *Spire* rather high, conical, scarcely subscalar. *Apex* sharp; for though the extreme tip is a little tumid, it stands well up and is rounded. *Whorls* 5, conical, slightly convex; the last is a little tumid above, but a little way behind the outer lip it becomes contracted and flattened. *Suture* distinct. *Mouth* rather large, not very oblique. *Outer lip* very oblique to the axis of the shell, slightly thickened, toothed and prominent in the middle, with large open sinus above, and a very slight one in front. *Inner lip:* there is a rather slight callus with a small tooth about the middle; the pillar-teeth, which are very far from parallel, are nearly equal. H. 0·18 in. B. 0·1. Mouth, height 0·1, breadth 0·07.

Ringicula grandinosa, Hinds, from the West African coast, is not unlike this species, but is smaller; the body-whorl in particular is much smaller, while the penultimate is larger; it is without

sculpture on the base, and the upper whorls are strongly spiralled. *Ringicula acuta*, Phil., from the Red Sea, is smaller, with a less swollen body-whorl and more tumid base, the whorls of the spire are less tumid and less exserted. *Ringicula someri*, De Folin, from the Cape Verde Islands, which is like in general aspect, is a much smaller, thicker, and more spiralled shell, with a less tumid body-whorl and more regularly conical spire, the slope of the whorls being more flattened; the apex, too, is much finer. *Ringicula semistriata*, d'Orb., from Cuba, is shorter, broader, and less spiralled. *Ringicula auriculata*, Ménard, which is perhaps as like as any, has not the contracted base, and its extreme tip is 0·004 in. broad, while here the tip is 0·008 in., or twice as much.

I have called this species *peracuta*, because, though certainly not very sharp, it is much more so than *Ringicula acuta*, Phil.

Family Bullidæ, d'Orbigny, 1841.

Genera. 1. *Bulla*, Klein. 2. *Atys*, Montfort. 3. *Scaphander*, Montfort. 4. *Amphisphyra*, Lovén. 5. *Utriculus*, Brown. 6. *Cylichna*, Lovén. 7. *Philine*, Ascanias.

1. *Bulla*, Klein,[1] 1753.

Species.

1. *Bulla ampulla*, Linne.
2. *Bulla australis*, Quoy and Gaimard.
3. *Bulla pinguicula*, Jeffreys.
4. *Bulla semilevis*, Seguenza.

1. *Bulla ampulla*, Linne.

Bulla ampulla, Linne, Syst. Nat., p. 1183, No. 378.
Martini, Conch. Cab., vol. i. pp. 279, 280, pl. xxi. figs. 188-193.
" " Bruguière, Encycl. méthod., vers, vol. i. p. 371, pl. cccl viii. fig. 3.
" " Dillwyn, Catalogue, vol. i. p. 479, sp. 18.
" " Wood, Ind. Test., p. 92, pl. xviii. fig. 18.
" " Lamarck, Anim. s. vert., vol. vi. (2) p. 33, and (ed. Desh.) vol. vii. p. 668, sp. 2.
" " Sowerby, Genera, vol. i. pl. xxxi. fig. 4.
" " Hanley, Ipsa Linn. Conch., pp. 204, 502.
" " Sowerby, Thes. Conch., vol. ii. pt. 11, p. 575, sp. 43, pl. cxxii. figs. 59–62.
" " Reeve, Conch. Icon., vol. xvi. pl. i. fig. 3.
" *solida* (Gmel.), Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 226, No. 259.
" *ampulla*, Issel, Malac. Mar Rosso, pp. 167, 281.
" " v. Martens, Moll. Mauritius, &c., p. 303.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Philippines (Sowerby); South-east Australia (Angas); Indian Ocean (v. Martens); Red Sea (Issel).

Fossil.—On the shores of the Red Sea (Issel).

[1] Though Klein belongs to the pre-Linnean period, it is but just that the genus he proposed should bear his name, since he differentiated it better than did Linne, who admitted into it many foreign elements.

2. *Bulla australis*, Quoy and Gaimard.

Bulla australis, Quoy and Gaimard, "Astrolabe" Zool., vol. ii. p. 357, pl. xxvi. figs. 38, 39.
" *quoyi*, Gray, App. to Dieffenbach's New Zealand, vol. ii. p. 243, No. 113.
" *australis*, *Bulla quoyi*, and *Bulla oblonga*, A. Adams in Sowerby's Thes. Conch., vol. ii. pt. 11. p. 576, sp. 45, pl. cxxii. figs. 64–66,—sp. 48, pl. cxxiii. fig. 71,—and p. 577, sp. 50, pl. cxxiii, fig. 74.
" *australis*, *Bulla quoyi*, and *Bulla oblonga*, Reeve, Conch. Icon., vol. xvi. pl. iv. fig. 12,—pl. iii. fig. 9,—and pl. vi. fig. 19.
" *oblonga*, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 226, No. 257.
" *australis*, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1878, vol. ii. p. 83, No. 34.
" *oblonga* and *Bulla quoyi*, Hutton, Manual, p. 121.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—North-east Australia, Fiji Islands (Brazier); Tahiti, Galapagos, Philippines (Adams); Port Jackson, Sydney (Angas); New Zealand (Hutton).

Bulla oblonga, A. Adams, is this species, and *Bulla quoyi*, Gray, is the young of the same.

3. *Bulla pinguicula*, Jeffreys.

Bulla pinguicula, Gwyn Jeffreys, a MS. name published in List of Bay of Biscay "Travailleur" Dredgings, Ann. and Mag. Nat. Hist., October 1880, ser. 5, vol. vi. p. 318, No. 140; also in Brit. Assoc. Report on the same, 1880, p. 10, No. 181.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 fathoms. Volcanic mud.

Habitat.—Bay of Biscay.

The solitary specimen of this species is very much broken, and the identification difficult. I was indebted to Dr Gwyn Jeffreys for the suggestion that it belonged to his species; his only hesitation lay in the apparent absence of punctured spiral striæ very characteristic of his species. A careful examination, however, showed that these are really present, and set doubt at rest. The Challenger specimens, however, are in too bad condition for description. I have no choice therefore but to leave them undescribed under Gwyn Jeffreys' name.

4. *Bulla semilevis*, Seguenza.

Bulla semilevis, Gwyn Jeffreys, Brit. Assoc. Report on "Travailleur" dredgings, 1880, p. 10, No. 182 (the mere name).
" " Seguenza, Form. Terz. Calabria, p. 251, pl. xvi. fig. 5.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of Azores. 1000 fathoms. Pteropod ooze. Bottom temperature 39·4 F.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 fathoms. Volcanic mud.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. Off San Miguel, Azores. 1000 fathoms. Volcanic mud.

Habitat.—Bay of Biscay (Jeffreys).

Fossil.—Middle Pliocene of Calabria (Seguenza).

This MS. name of Dr Gwyn Jeffreys has been adopted by Seguenza, who figures and gives a very short description of the species, which must, of course, be attributed to the describer.

2. *Atys*, Montfort, 1810.

The very peculiar twist of the outer lip above the top of the body-whorl, and the consequent sinus in the lip, just at its insertion, form a very well-marked distinction for this genus, as Mr E. A. Smith has already pointed out. Mr A. Adams' definition, though vague and unsatisfactory, by no means excludes this feature, though the addition necessitates, of course, the removal of many species he has reckoned to the genus.

Species.

1. *Atys cylindrica* (Helbling).
2. *Atys debilis*, Pease.
3. *Atys parallela*, Gould.
4. *Atys hyalina*, Wats.
5. *Atys* (*Dinia*) *dentifera*, A. Adams.

1. *Atys cylindrica* (Helbling).

Bulla cylindrica, Helbling, Beyträge z. Kent. neu. Conch., Abhandl. Böhm. Privatgesellsch., 1879, vol. iv. p. 122, No. 18, pl. ii. figs. 30, 31.
„ „ Chemnitz, Conch. Cab., vol. x. p. 121, pl. cxlvi. figs. 1356, 1357.
„ *solida*, Bruguière, Encycl. méthod., vers, vol. i. p. 374, pl. cccix. fig. 2.
„ *cylindrica*, Dillwyn, Catalogue, vol. i. p. 496, sp. 56.
„ „ Wood, Ind. Test., p. 96, pl. xiii. fig. 56.
„ *solida*, Lamarck, Anim. s. vert., vol. vi. (2), p. 36, and (ed. Desh.) vol. vii. p. 673, sp. 11.
„ *cylindrica*, Sowerby, Genera, vol. i. pl. xxxi. fig. 7.
„ (*Atys*) *solida*, *Bulla* (*Atys*) *cylindrica*, and *Bulla* (*Atys*) *elongata*, Adams in Sowerby's Thes. Conch., vol. ii. pt. 11, p. 585, sp. 82, pl. cxxiv. figs. 112, 113,—sp. 83, pl. cxxv. fig. 114, —and p. 587, sp. 90, pl. cxxv. fig. 121.
Atys solida, *Atys cylindrica*, and *Atys elongata*, Reeve, Conch. Icon., vol. xvii. pl. i. fig. 4,—pl. ii. fig. 7,—and fig. 8.
„ *solida*, Issel, Malac. Mar Rosso, p. 168, No. 416.
„ *cylindrica*, E. A. Smith, Marine Shells Andamans, Proc. Zool. Soc. Lond., 1878, p. 819, No. 67.
„ „ Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1878, vol. ii. p. 85, No. 43.
„ „ v. Martens, Moll. Mauritius, &c., p. 303.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Luzon in the Philippines (Adams); Claremont Isles, lat. 13° 48′ S., long. 143° 40′ E., and Andaman Islands (British Museum); the Indian Ocean, from South Africa and the Red Sea to Australia (v. Martens); Torres Straits, 11 fathoms (Brazier).

V. Martens (*loc. cit.*), says this seems to be the *Bulla* (*Haminea*) *succisa*, Deshayes, p. 54, Moll. Réunion = *Atys succisa*, Sowerby's Thes. Conch., p. 586, sp. 85, pl. cxxv. fig. 116, which is not Ehrenberg's species.

2. *Atys debilis*, Pease.

Atys debilis, Pease, New Sandwich Islands Moll., Proc. Zool. Soc. Lond., 1860, p. 20, No. 7.
„ „ Reeve, Conch. Icon., vol. xvii. pl. v. fig. 28.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Sandwich Islands (Pease).

Dr Carpenter (Proc. Zool. Soc. Lond., 1865, p. 516) says that this species "appears to be identical with *Atys succisa* (Ehrenb.), and simply a slender variety of *Atys alicula*, A. Adams; but around the whole group there is confusion, which I have not present opportunity to clear up, and I therefore retain Mr Pease's name as published, and as excellently figured by Reeve, and represented in the British Museum.

3. *Atys parallela* (?), Gould.

Atys parallela, Gould, Proc. Boston Soc. Nat. Hist., 1847, December, vol. iii. p. 251.
„ „ Gould, United States Exploring Exped., p. 220, pl. xv. fig. 267.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—"Unknown" (Gould).

I have marked this species with a query, for the only specimen by which it is represented is chipped and rubbed, and it seemed to me not perfectly to agree in form with the British Museum specimen, being somewhat longer, and toward the apex more tumid; but it corresponds so well with both the figure and description of Gould, that I have ventured to put it under his species.

4. *Atys hyalina*,[1] Watson (Pl. XLVIII. fig. 1).

Atys hyalina, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 341.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York, North Australia. 8 fathoms. Coral mud.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Near Cape York, North Australia. 6 fathoms. Coral mud.

[1] Not *Bulla hyalina*, Gmelin.

Shell.—Oval, subgibbous, a little abruptly contracted and slightly constricted and truncated above, striated, thin, hyaline, umbilicated, with a longish curved mouth. *Sculpture:* Longitudinals—there are very many slight equal hair-like lines of growth Spirals—with the exception of a narrow nearly medial band, which is smooth, the whole surface is scratched with fine smooth regular square-cut widely parted furrows. These are rather more regularly arranged above than below, where the interstices are more wide and less regular; but toward the end of the shell in both directions the furrows tend to become crowded; they extend to the very edge of the funnel-shaped depression of the apex; but the depression itself is smooth except for the twisted edge of the outer lip, which at the generic sinus is reverted as usual but somewhat narrowly: in front they score the umbilicus on one side, but do not quite extend to the edge of the pillar. *Colour* hyaline to translucent. *Mouth* long, curved, rather narrow, and not much enlarged in front. *Outer lip* convex, posteriorly produced; the generic twisted sinus is rather small; above it the lip rises and advances, and forms a sharp curve: from this point the lip runs out to the right, at first straight or faintly concave, and here a little contracted, but afterwards with a very regular curve, and increasingly patulous to the point of the shell. *Top* very obliquely truncate, with a bluntish edge and a small funnel-shaped depression, which, through the generic sinus, leads into the interior of the shell. *Inner lip:* there is no glaze on the body, the curve of which is a little gibbous above; the pillar-edge is narrow, reverted, bluntly toothed, twisted, and truncated in front; at the top of the pillar this edge is very much twisted, and is there separated from the body, leaving a very narrow but deep fissure communicating with the deep umbilicus which lies behind, and is partly covered by the expanded and projecting pillar-edge. H. 0·44 in. B. 0·24. Breadth of mouth at same place, 0·07.

I do not know any *Atys* with which to compare this very beautiful and delicate species. It has something of the gibbosity of *Atys cylindrica* (Helb.), var. *solida*, in its stumpiest forms; but the texture of the shell, the sculpture, and the umbilicus are very different. The specimens from Stations 186 and 187 are quite young shells, but are, I have no doubt, this species. From Honolulu, 40 fathoms, there is a specimen of *Atys* probably belonging to this species, but in too bad condition for identification with any certainty.

5. *Atys* (*Dinia*) *dentifera*, A. Adams.

Bulla (*Atys*) *dentifera*, A. Adams in Sowerby's Thes. Conch., vol. iii. pt. 11, p. 588, sp. 93, pl. cxxv. fig. 124.
Atys (*Dinia*) *dentifera*, Adams, Genera, vol. ii. p. 21.
„ *dentifera*, Reeve, Conch. Icon., vol. xvii. pl. iii. fig. 13.
„ (*Dinia*) *dentifera*, v. Martens, Moll. Mauritius, &c., p. 303.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York, North-east Australia. 8 fathoms. Coral mud.

Habitat.—Lord Hood's Island (Adams); Mauritius and Polynesia (v. Martens).

It is scarcely possible to admit this species into the genus *Atys*. The outer lip is not sinuated, and can hardly be said to rise at its insertion. I believe it would be better to class it with *Cylichna*.

3. *Scaphander*, Montfort, 1810.

Species.

1. *Scaphander punctostriatus*, Migh.
2. *Scaphander mundus*, Wats.
3. *Scaphander niveus*, Wats.
4. *Scaphander gracilis*, Wats.

1. *Scaphander punctostriatus* (Mighels).

Bulla punctostriata, Mighels, Proc. Boston Soc. Nat. Hist., 1841, vol. i. p. 49.
„ „ Mighels, Journ. Boston Nat. Hist., 1842, vol. iv. p. 43, pl. iv. fig. 10.
Scaphander librarius, Lovén, Ind. Moll. Scandinav., Öfversigt Vet. Akad. Förh., 1846, p. 142, No. 61.
„ (*Scaphander*) *punctostriata*, Adams in Sowerby's Thes. Conch., vol. ii. pt. 11, p. 575, pl. cxxi. fig. 50.
„ *librarius*, Jeffreys, Brit. Conch., vol. iv. p. 446, vol. v. p. 224, pl. cii. fig. 9.
„ *punctostriatus*, Binney's Gould, Inverteb. Massachusetts, p. 215, fig. 505.
„ *librarius*, Jeffreys, Biol. Report "Valorous" Dredgings, Proc. Roy. Soc. Lond., 1876, vol. xxv. pp. 185, 194, &c.
„ „ Jeffreys, Gastropoda of "Valorous" Exped., Ann. and Mag. Nat. Hist., 1877, ser. 4, vol. xix. p. 335.
„ „ Monterosato, Enumerazione, p. 51.
„ *punctostriatus*, G. O. Sars, Moll. Arct. Norv., p. 292, No. 210, pl. xviii. fig. 6.
„ „ Jeffreys, Moll. of East and West Shores of North Atlantic, Brit. Assoc. Report, 1884, p. 3.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of Azores. 1000 fathoms. Pteropod ooze. Bottom temperature 39°·4 F.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. San Miguel, Azores. 1000 fathoms. Volcanic mud.

Habitat.—Casco Bay, Massachusetts (Mighels); Iceland, Shetland, and the North Atlantic, generally to 1450 fathoms (Jeffreys); Norway, from 50 to 300 fathoms (Sars); Palermo, Mediterranean, 60 fathoms (Monterosato).

The paper in which this species was communicated was read by Gould on behalf of Dr J. W. Mighels and Professor C. B. Adams, but the species is stated to be described by Mighels.

Seguenza, on whose authority this species was attributed as a fossil to the "Older Pliocene of Sicily" (Gwyn Jeffreys, Ann. and Mag., April 1877, p. 336, Moll. "Valorous" Exped.), now considers that his identification was inaccurate, and the species he took for this is distinct and new (Form. Terz. Calabria, p. 250).

2. *Scaphander mundus*, Watson (Pl. XLVIII. fig. 2).

Scaphander mundus, Watson, Prelim. Report, pt 20, Journ. Linn. Soc. Lond., vol. xvii. p. 342.

Station 191. September 23, 1874. Lat. 5° 41′ S., long. 134° 4′ 30″ E. Off Arrou Island, west of Papua. 800 fathoms. Green mud. Bottom temperature 39°·5 F.

Shell.—Obliquely oval, thin, opaque, ivory-white, glossy, stippled in spiral lines, above narrowed obliquely, concavely truncated, and on the right bluntly pointed, below rounded. *Sculpture:* Longitudinals—there are very fine hair-like lines of growth, with slight irregular interrupted and unequal undulations. Spirals—the whole shell is covered with small shallow distant impressed dots: these above are roughly rounded or obliquely longitudinal; but from about one-third of the way down they become transversely elongate: they are arranged in rows not quite equal, and which are parted by intervals of fully double the breadth of the dotted rows: towards the point of the base the dots tend to return to the round shape, and the rows of largish dots are parted by rows of minute transversely elongated dots which occur in the intervals. Besides these, there are over the whole surface the close-set superficial microscopic spiral lines, which seem to be a characteristic of the genus. *Epidermis* excessively thin, membranaceous, and glossy, of a faint straw colour. *Colour* ivory-white. *Crown* oblique. There is a slight indentation or small conical pit almost completely coated with the glaze of the lip: this little pit is encircled by a very slight and blunt keel. *Mouth* irregularly pear-shaped, being somewhat narrowed above and expanded below. *Outer lip* projects a little angularly behind, and here it is reverted, thickened, and appressed: from the highest point of its rise it sweeps round to the point of the pillar with a very equable curve; it is very patulous on the base. *Inner lip* flexuous, being very convex on the body and openly concave on the pillar. A very thin glaze extends from the outer lip above across the body to the pillar, which has a pretty strongly reverted rounded and twisted edge, up which one can just see into the interior of the shell for nearly two turns. H. 1·15 in. B. 0·78. Greatest breadth of mouth, 0·61.

This is a delicately beautiful shell, curiously intermediate between *Scaphander lignarius* (Linne), and *Scaphander puncto-striatus* (Migh.), while perfectly distinct from both. In form it is less like a *Bulla* than the latter, while the attenuation above is less, and the expansion of the outer lip below is even greater than in the former. Lying on its face, it is broader and is more flattened, and that, too, more obliquely than either. Its puncto-striate spiral sculpture approaches that of *Scaphander puncto-striatus* (Migh.).

Scaphander nobilis, Verrill, is a good deal like, but there the proportion of the body-whorl to the size of the mouth is greater, and the outer lip rises higher and bends more to the left at the top of the shell; the whole shell, too, is narrower.

3. *Scaphander niveus*, Watson (Pl. XLVIII. fig. 3).

Scaphander niveus, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 343.

Station 214. February 10, 1875. Lat. 4° 33′ N., long. 127° 6′ E. South-east of the Philippines. 500 fathoms. Blue mud. Bottom temperature 41°·8.

Shell.—Thinnish, obliquely oval, slightly narrowed and rounded above, where the outer lip rises on the right like a tooth; in front it is rounded with a very blunt angulation at the point of the pillar; ivory-white, glossy, striate, but scarcely stippled. The body is rather tumid, and shaped like a *Bulla*. *Sculpture:* Longitudinals—there are exceedingly faint hair-like lines of growth, of which, at frequent intervals, one more distinct produces a slight undulation of the surface. Spirals—the whole shell presents the microscopic and very superficial crimpings of the genus, which become rather strong on the base; there are also some very superficial and extremely obsolete bandings or furrows and ridges, which are scarcely appreciable. Besides these, the upper half of the shell and the point of the base are scratched with fine square-cut striæ, which, with a little difficulty, can be recognised as formed of minute contiguous stipplings: these are very remote in the middle of the shell, but towards either extremity they become crowded. *Epidermis* membranaceous. *Colour* white, with a faint ivory tinge. *Crown* consists only of the flatly rounded margin of a very small pit-like depression in front of the origin of the outer lip, which rises abruptly above the top of the shell. *Mouth* curved, rather club than pear shaped, being gibbously enlarged in front and elongate and rather narrow behind. *Outer lip* thickened, reflected, and sinuated above, where, curving forwards, it rises in a tooth-like form above the crown; from this point it sweeps very equably round to the point of the pillar, the curve being very slightly flattened above, and somewhat full on the base: it is patulous throughout: the very thin edge is nowhere very prominent. *Inner lip* roundly convex on the body, bluntly angulated at the top of the short scarcely curved and barely truncate pillar. A thickish and rather prominent glaze joins the two extremities of the outer lip: near its edge on the upper part of the body this glaze has a few irregular rounded tubercles: on the base, where it is thickened to a pad, these tubercles increase in size and number, while the reverted pillar-lip is harshly covered with them. The pillar-lip is not quite closely appressed, having an overhanging edge and a closed chink behind it. H. 1·15. B. 0·8. Greatest breadth of mouth, 0·56.

Only one specimen of this species having been found, it is impossible to say whether the roughening of the labial glaze is a specific feature, as in some of the Volutes, or the result of

disease. In this species the general form of the shell, and especially that of the body-whorl, is even liker a *Bulla* than is the case with *Scaphander puncto-striatus* (Migh.); but the apex is not perforated. As in that species, one, looking up the pillar, can only see a single complete whorl. The minute stippling of the spirals resembles, on a still smaller scale, that feature in *Scaphander lignarius* (Linne). Compared to *Scaphander mundus*, Watson, this is a much more tumid form, and the sculpture is markedly different.

4. *Scaphander gracilis*, Watson (Pl. XLVIII. fig. 4).

Scaphander gracilis, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 345.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of Azores. 1000 fathoms. Pteropod ooze. Bottom temperature 39°·4 F.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. Off San Miguel, Azores. 1000 fathoms. Volcanic mud.

Shell.—Thinnish, oblong, slightly flattened, a little narrowed upward, obliquely truncate at the top, where the outer lip rises like a tooth on the right; in front it is a little oblique toward the right, very little expanded, rounded towards the point. The mouth is pear-shaped and small for the genus. *Sculpture:* Longitudinals—the lines of growth are very slight. Spirals—the whole surface is dotted over with fine remote stipplings somewhat variable in size and shape, running in rather oblique spiral lines, which are a little crowded above and distant in front, where, however, an additional finer line of minute stipplings is often intercalated. *Epidermis* membranaceous, pale lemon-yellow. *Colour* dead white, with occasional translucent longitudinal bands. *Crown* consists of the bluntly rounded edge of a small shallow round pit, which is partly or wholly choked up with the labial callus: the line across the crown is very oblique. *Mouth* rather small, pear-shaped, and nearly straight. *Outer lip* slightly thickened and reflected on the crown of the shell, from which it rises upwards and projects forwards like a tooth: from this point it advances almost straight with a patulous and scarcely convex edge to the beginning of the base, whence it sweeps round, retreating and very patulous to the point of the pillar. *Inner lip* very slightly convex above, almost straight in its oblique course across the base; on all this part a thickish well-defined glaze is spread on the front of the body; as the mouth begins to widen, this glaze is pressed out into a blunt angulation, almost a tooth, which is prolonged to the left in the narrow-edged, flat-fronted, truncated, twisted, concave pillar: here the reverted callus, which dies out at the point of the pillar, has behind it a small shallow flat furrow leading up into a pore-shaped umbilicus. Looking up the axis of the shell, though the opening is rather narrow, two whorls can be distinguished. H. 0·62 in. B. 0·34. Greatest breadth of mouth, 0·24.

This is a long and narrow shell with little of the generic peculiarity of shape, though the anterior splay form is recognisable. The singular thickening of the pillar seems to increase with

age. In the three specimens from Station 78 it is much more strongly marked than in the somewhat younger shells from Station 73. The young shells of *Scaphander puncto-striatus* (Migh.), are squatter, rounder, with a flatter crown, and have the outer lip less produced behind; their stippled sculpture, which varies a good deal, is often coarser, and forms more continuous spirals; the pillar-lip, too, and shape of the body are very different. In one of the specimens, from Station 78 in particular, the slow wasting away of the surface has scarcely attacked the stippled pits of the spirals, which accordingly remain projecting as flat round tubercles.

4. *Amphisphyra*, Lovén, 1846.

I adopt this genus for some forms of which the Challenger obtained only two—one here described, the other too young for differentiation. These forms differ from *Aplustrum*, Schum., in the absence of all colour and in the form of the pillar; from *Utriculus* in the whole habit of the shell, in the absence of any tooth or twist on the pillar, and in the inflated mamillary apex, a feature which exactly corresponds with Lovén's definition of *Amphisphyra*. G. O. Sars rejects Lovén's name of *Amphisphyra* in favour of *Diaphana* of Brown, but this latter name was cancelled by its author in favour of *Utriculus*, and it is obviously impossible to accept *both* of these as Professor Sars has done.

Amphisphyra seguenzæ, n. sp. (Pl. XLVIII. fig. 5).

Bullina undata (as of Chiaje), Seguenza, Form. Terz. Calabria, p. 251, pl. xvi. fig. 9.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Habitat.—Stations 16, 17, 17a. of the "Porcupine" dredgings, North Atlantic (Jeffreys); west of the Azores in 1000 fathoms (Watson).

Fossil.—From the Middle Pliocene (Seguenza).

Shell.—Small, oval, glossy, finely spirally stippled, with the large open mouth and simple lips of a *Bulla*, but with a small prominent mamillate apex. *Sculpture:* Longitudinals—there are over the whole surface fine close lines of growth. Spirals—there are fine sharp lines made of minute round stippled dots; above, these lines are crowded, in the middle they are sparse, towards the point they are again closer. *Colour* semi-translucent white, with a greyish surface. *Spire* very short and blunt, sometimes not raised at all. *Apex* a small but coarse, slightly prominent, mamillate tip. *Suture* impressed. *Mouth* resembling that of a *Bulla*, and shaped like a long bent pear. *Outer lip* rises slightly above the body, sometimes to a level with the tip, retreats above and below, and is roundly prominent in the middle, where it slightly bends inwards, elsewhere it is patulous; its sweep is very regular throughout. *Inner lip* roundly curved on the body, rather deeply concave at the top of the pillar, along which it runs nearly straight: a broad pad with defined edge spreads across the body, and is pretty broad and reverted on the pillar, with

a very slight twist on its front edge and a minute umbilical chink behind; the lip is not emarginate in front. L. 0·15. B. 0·1. Greatest breadth of mouth in front, 0·05.

There has been some confusion regarding this species, perhaps in consequence of the rarity of the third volume of Poli's Molluschi by Chiaje, which is rarely to be found in even the best public libraries. There is no *Bullina undata* in Chiaje's work. Adams in his Genera, vol. ii. p. 8, quotes *Bullina undata*, Brug. (see Encycl. méthod. vers, vol. i. p. 380, sp. 16, which = *Bulla nitidula*, Dill., p. 483, and *Bullina elegans*, Menke, Syn. Method, 2d ed., p. 125; see also Mart., Conch. Cab., vol. i. p. 283, Vign. on p. 174, pl. xiv. figs. 4, 5), as that figured by him at pl. lvi. figs. 5, 5a., but in the explanation of the plate, vol. iii., he attributes the "*Bullina undata*" of figs. 5 and 5a. to Chiaje, Poli, vol. iii. pl. xlvi. fig. 29, but in Adams, plate lvi. figs. 5 and 5a., it is obvious that two quite different shells are presented. Of these 5a. represents probably *Bulla scabra*, Chem., while fig. 5 is certainly copied from Chiaje, as stated, only the copy is bad as introducing a distinct-whorled spire, while Chiaje's original presents only a minute dome-shaped tip. In the text, Chiaje at p. xx. *bis*, p. xliii., and at p. 27, describes the shell and animal he had figured (in pl. xlvi. figs. 29, 30) as *Bulla pisum*, Féruss., Dictionnaire classifié d'histoire naturelle, p. 573.

What the *Bulla pisum*, Féruss., may be, I do not know; Chiaje's species, so called, is obviously not a *Bullina* (which is a mere synonym for *Aplustrum*), and may probably be *Bulla striata*, Brug. In any case he has no *Bullina undata*. Adams' *Bullina undata* is a hopeless confusion throughout. In these circumstances I have considered the Challenger shell as a new species, and have given it the name of Professor Seguenza, who individualised and figured, though he did not describe it.

5. *Utriculus*, Brown, 1844.

Species.

1. *Utriculus mamillatus* (Philippi).
2. *Utriculus planospira* (A. Adams).
3. *Utriculus*, n. sp., Wats.
4. *Utriculus spatha*, Wats.
5. *Utriculus leucus*, Wats.
6. *Utriculus complanatus*, Wats.
7. *Utriculus tornatus*, Wats.
8. *Utriculus amphizostus*, Wats.
9. *Utriculus oryctus*, Wats.
10. *Utriculus famelicus*, Wats.
11. *Utriculus simillimus*, Wats.
12. *Utriculus* (*Tornatina*) *canaliculatus* (Say).
13. *Utriculus* (*Tornatina*) *voluta* (Quoy and Gaimard).
14. *Utriculus* (*Tornatina*) *leptekes*, Wats.
15. *Utriculus* (*Tornatina*) *acrobeles*, Wats.
16. *Utriculus* (*Tornatina*) *avenarius*, Wats.
17. *Utriculus* (*Tornatina*) *aratus*, Wats.
18. *Utriculus* (*Tornatina*) *amboinensis*, Wats.
19. *Utriculus* (*Tornatina*) *pachys*, Wats.

1. *Utriculus mamillatus* (Philippi).

Bulla mamillata, Philippi, Enumeratio Moll. Sicil., vol. i. p. 122, pl. vii. fig. 20, vol. ii. p. 95.
" " (*Tornatina*) *mamillata*, Adams in Sowerby's Thes. Conch., vol. ii. pt. 11, p. 566, sp. 13, pl. cxxi. fig. 26.
Cylichna mamillata, Forbes and Hanley, Brit. Moll., vol. iii. p. 514, pl. cxiv. (c.) figs. 4, 5.
Utriculus mamillatus, Gwyn Jeffreys, Brit. Conch., vol. iv. p. 420, vol. v. pl. xciv. fig. 1.
" " Monterosato, Enumerazione, p. 50.
" " Seguenza, Form. Terz. Calabria, pp. 251, 351.

February 10, 1873. Tenerife, Canaries. 75 fathoms.

Habitat.—Mediterranean (Philippi, &c.); from Finmark to the Canaries, from low water to 60 fathoms (Jeffreys).

Fossil.—Middle Pliocene onwards (Seguenza); Sicilian Post-pliocene (Philippi); Scotland, Norway, France (Jeffreys).

2. *Utriculus planospira* (A. Adams).

Bulla (Tornatina) planospira, A. Adams in Sowerby's Thes. Conch., vol. ii. pt. 11, p. 568, sp. 19, pl. cxxi. fig. 32.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Wednesday Island, Cape York. 6 fathoms. Coral mud.

(?) Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York. 28 fathoms. Green mud.

Habitat.—Luzon (Sowerby); Philippines (British Museum).

A mark of interrogation is prefixed to the second of the localities given above, because I do not feel quite convinced that the specimen thence obtained is really this species; the spire is more elevated, the apex more prominent, and the crown of each whorl, as it coils in to the apex, is rounded and projecting; while the axial carina, which in *Utriculus planospira* is simple, is in this shell internally marginated by a little furrow. I had originally separated this specimen as distinct, but as there is only the one specimen, it seems the safer course to follow Dr Gwyn Jeffreys' advice and unite them.

3. *Utriculus*, n. sp., Watson (Pl. XLVIII. fig. 6).

Utriculus oliviformis, n. sp. (?), Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 332.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of the Azores. 1000 fathoms. Bottom temperature 39°·4. Pteropod ooze.

This large and very interesting species is in too bad condition for satisfactory description. I had called it *Utriculus oliviformis* from its shape, which is peculiarly stumpy, with an excessively short and broad mouth and an unusually high and blunt spire; it is sharply fretted all over with spiral lines, and has a strong little furrow behind the sharp-edged twisted pillar. It is like *Utriculus culcitella*, Gould, or *Utriculus lactuca*, Nevill, in its conical spire, and like *Utriculus simplex*, A. Adams, in shortness of body. *Tornatina olivula*, A. Adams, is much slimmer, longer in the mouth, and much more cylindrical. It differs from *Utriculus spatha*, Watson, in its greater breadth, higher spire, shorter mouth, coarser sculpture, more numerous whorls, and more abrupt truncation in front, where the shell is cut off almost at right angles to the axis. H. 0·32 in. B. 0·17. Mouth, height 0·2, breadth 0·05

4. *Utriculus spatha*, Watson (Pl. XLVIII. fig. 7).

Utriculus spatha, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 333.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Large, cylindrically oblong, gradually and slightly narrowing forwards, more abruptly so up the short stumpy and very blunt spire, thick, exquisitely reticulated, with a truncated and toothed pillar and a straight slightly contracted outer lip. *Sculpture*: Longitudinals—the whole surface is delicately and sharply scored in the lines of growth with very fine rounded furrows parted by sharper and much narrower ridges, which are about $\frac{1}{120}$ of an inch apart. Spirals—a little stronger than the longitudinals which they cut across, are spiral lines very distinct above, one or two on the shoulder being even strong and remote, more delicate and similar to the longitudinals in front, and in the middle very faint indeed, only sufficient to produce a satiny sheen; round the top of the whorls below the suture is a very broad shallow furrow or slight constriction bordered by a very feeble keel below, which forms a vague shoulder. *Colour* ivory-white. *Mouth* $\frac{5}{8}$ of the whole length of the shell, in shape somewhat clavate, being shortly broad in front, elongately conical throughout the most of its length, and rapidly contracted at the top. *Whorls* $2\frac{1}{2}$, rounded above with a very slight concave constriction below the suture, subcylindrical in the middle and rounded in front. *Suture* linear, impressed, and very slightly horizontally margined below. *Outer lip* contracted and appressed above, so that the top of the mouth runs up to a long and very narrow point, bluntly angulated at the shoulder, below this it is straight but draws in towards the axis, in front it is patulous and well rounded; the edge line is convex, and retreats very rapidly in front, where the shell is abruptly truncate. *Top* very bluntly rounded, the apex being to some extent enveloped in the succeeding whorl, which rises slightly above it. *Inner lip:* a thick pad of glaze, with well-defined edge, extends down the slightly convex body, and passes with gradual sweep into the twisted subconcave pillar which is truncate in front; at the top of the pillar the glaze is much thickened, and presents for a short distance two very oblique twisted parallel folds, which are parted by a small furrow; another furrow lies outside, between the exterior fold and the glaze edge. H. 0·3 in. B. 0·14. Mouth, height 0·25, breadth 0·03.

This exceedingly peculiar form in many respects recalls, rather than a *Utriculus*, one of the long narrow low-spired Marginellas, such as *Marginella nevilli*, Jouss, or *Marginella avena*, Kien.

5. *Utriculus leucus*,[1] Watson (Pl. XLVIII. fig. 8).

Utriculus leucus, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 334.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of Azores. 1000 fathoms. Pteropod ooze. Bottom temperature 39°·4.

[1] λευκός, white.

Shell.—Strong, cylindrical with a very slight upward taper, rounded at either end, with an oblique flat apex and a minute perforation round which the edge of the penultimate whorl is visible, and in the middle the sunken apex; the mouth is small and narrow, and in front abruptly truncate, with a short truncate very bluntly toothed pillar. *Sculpture:* Longitudinals—there are slight unequal furrows on the lines of growth. Spirals—the whole surface is most faintly and doubtfully marked with very feeble furrows both narrow and superficial, parted by broadish flat interstices. *Colour* translucent white, with a faint brownish tinge, glossy. *Mouth* long, narrow, shorter than the shell, straight, with parallel sides, the enlargement in front sudden, but very short. *Outer lip* straight, rounded above, where it springs from the callus of the inner lip; it does not rise so high as the opposite side of the apex, which consequently is rather oblique; its edge line is slightly produced in the middle, but not bent in; in front the lip, in common with the whole shell, is very abruptly truncate, and here it sweeps round with a strong, sharp, bevelled edge to join the pillar lip. *Top* roundly flattened down and slightly bent in, round the small apical perforation—round which 1½ to 2 whorl edges are visible. *Inner lip:* across the body runs a strongish callus, whose edge is parallel to the edge of the outer lip; in front it is flatly and broadly appressed on the very stumpy pillar, round which twists a strongish but very blunt tooth. H. 0·25 in. B. 0·11. Breadth of mouth at same place, 0·03.

This species is very like *Cylichna alba*[1] (Brown), but it is squarer both above and below, the obliquity of the line of the top is exactly the opposite of that in *Cylichna alba*, where from the outer lip rising above the top of the shell, the greatest height is at the mouth; while in *Utriculus leucus*, the top is highest on the side away from the mouth.

Utriculus vortex, Dall, appears to present several points of resemblance; but that species seems to taper much more toward the tip, to be differently and much more strongly sculptured, to have no pillar-tooth, and to be very much broader in proportion to height. H. 0·3 in. B. 0·17.

The *Tornatina eximia*, Baird, has a more perfectly cylindrical form, a higher spire, and a much wider mouth.

6. *Utriculus complanatus*, Watson (Pl. XLVIII. fig. 9).

Utriculus complanatus, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 335.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, off south-west point of Papua. 28 fathoms. Green mud.

Shell.—Minute, cylindrical, truncated and flat on the top, very much and obliquely truncated in front, with whorls angulated above and furrowed longitudinally and spirally, a papillary apex, a longish pillar, and a club-shaped mouth. *Sculpture:* Longitudinals—the furrows on the lines of growth are strong and curved. Spirals—the whole surface is scored with sharp irregular furrows parted by flat intervals of about three times their

[1] The similarity, indeed, suggested the name.

width. *Colour* white. *Mouth* the full length of the shell, narrow above, oblong and roomy in front, club-shaped. *Whorls* 3; on the top of the shell they are rounded. *Suture* slightly impressed. *Outer lip* rises roundly the least thing above the top; its course is straight, with a very slight concavity; its edge is prominent. *Top* perfectly flat, with a roundly angulated edge; the individual whorls are rounded, and are parted by a somewhat impressed suture; the central tip, which is glossy, is papillary, but depressed. *Inner lip* is, on the body, slightly concave in its course; the pillar is oblique, nearly straight, and is patulous. H. 0·05 in. B. 0·028. Breadth of mouth at same place, 0·013.

This is a very small species, the solitary specimen of which is not in good condition. It is a good deal like *Utriculus truncatulus* (Brug.); but the sculpture is a very marked feature of difference, and the form is more stumpy.

7. *Utriculus tornatus*, Watson (Pl. XLVIII. fig. 10).

Utriculus tornatus, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 335.

Station VIIp. February 10, 1873. Lat. 28° 35′ N., long. 16° 5′ W. Tenerife. 78 fathoms. Volcanic sand.

Shell.—Small, cylindrically oblong, a little tumid in front, slightly narrowed backwards, rounded at the shoulder, longitudinally and spirally striate, with a flat top, a small papillary apex, and straight club-shaped mouth. *Sculpture:* Longitudinals—there are many fine, rounded, feeble lines of growth. Spirals—there are many very faint minute superficial spiral lines which owe somewhat of distinctness to the colour, and to the fact that at somewhat regular intervals there occurs one a little stronger than the rest. *Colour* transparent white, irregularly banded with unequal spiral milky stripes, which are obsolete in many specimens. *Mouth* club-shaped, the full length of the shell, long and narrow above, slightly enlarged at the top, considerably so in front by the contraction of the body-whorl at the base. *Whorls* 3, far from distinct, slightly rounded, of very gradual increase; the extreme apex is minute, but papillary. *Outer lip* rises very slightly above the flat crown, and here it is very patulous, and almost emarginate; just where it begins to run forward it is very slightly expanded, from this point to the base, it advances quite straight, and a little inflected; on the base it is freely rounded, truncated, and patulous. *Top* is barely oblique, and the rise of the outer lip elevates that side, so that the whole top is almost flat, with more or less of a depression in the middle where the minute dome-shaped apex rises. *Inner lip:* there is a strong well-defined labial glaze which runs quite straight and continuously from the outer lip across the scarcely convex body, and passes on with a quick deflection to the left into the slightly concave, scarcely toothed, oblique, truncated pillar, where the lip is narrow, expanded, and appressed, with a minute furrow behind. H. 0·092 in. B. 0·046. Breadth of mouth at same place, 0·005.

This is a species extremely abundant at Madeira, where I dredged many thousand specimens.

They vary somewhat in the relation of length and breadth, and still more in the form of the crown, which is sometimes flat and broadish, with an impressed suture, at other times narrow, with a small deep opening and a very depressed apex, the suture in these circumstances being out of sight. I should expect to find this species among Mediterranean shells, but have not been able to identify it. It is not unlike *Utriculus mamillatus* (Phil.), but is stumpier and not so cylindrical, being broader in front and more tapering backwards; its papillary apex, too, is much smaller and more sunken into the crown of the shell than it is in that species: the whole crown is very much like that of *Utriculus truncatulus* (Brug.), but the characteristic constriction and sculpture of that species are wanting.

8. *Utriculus amphizostus*,[1] Watson (Pl. XLVIII. fig. 11).

Utriculus amphizostus, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 336.

September 8, 1874. Flinders Passage, Cape York, North Australia. 7 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Near Cape York. 6 fathoms. Coral mud.

Shell.—Small, rather broadly cylindrical, but contracted in the middle, and broadest below the contraction, very bluntly rounded in front, longitudinally striate and very finely spiralled, with a flat but slightly depressed crown and a small papillary apex. *Sculpture:* Longitudinals—there are a great many small hair-like ridges and furrows on the lines of growth; they are nowhere strong, but are feeblest on the base. Spirals—the whole surface is very equally striated, with delicate shallow scratched lines parted by flat surfaces four or five times the width of the lines; there is a very slight and gradual constriction, most apparent near the outer lip about the middle of the body, and in front of this the shell is slightly tumid. *Colour* translucent white, with vague trace of spiral bands. *Mouth* the full length of the shell; shaped like a racket, being oval in front, long and narrow above; it is small and rounded at the top, which just rises to the crown. *Whorls* 4, of which only the small rounded tops are seen on the crown, where they are slightly and radiatingly ridged, the last envelops all the others. *Suture* impressed and distinct. *Outer lip* rounded at the top, where it does not rise above the crown; it runs straight and parallel to the inner lip till below the middle, where it bends outwards in exact symmetry with the corresponding bend of the inner lip on the base, forming a very regular oval curve in front; the edge line is regularly curved, retreating slightly behind and in front, and advancing in the middle where the lip is contracted. *Top* flat, but slightly depressed, with a small papillary apex in the middle, the outer edge is roundly angulated. *Inner lip* straight down the body, concave on the pillar, which has a very slight twist and a narrow patulous edge, behind which is a scarcely appreciable umbilical depression; the point of the pillar projects in front clear of the sweep of the basal curve. H. 0·12 in. B. 0·06. Breadth of mouth at same place, 0·02.

[1] ἀμφιζώστος, girt in.

This species is very like *Utriculus truncatulus* (Brug.); but that has much stronger longitudinals, no spirals, and an oblique crown, sloping down from left to right, on which side the top of the mouth and outer lip rise in a rounded loop very considerably above the top of the body-whorl.

9. *Utriculus oryctus*,[1] Watson (Pl. XLVIII. fig. 12).

Utriculus oryctus, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 337.

Station 344. April 3, 1876. Lat. 7° 54′ 20″ S., long. 14° 28′ 20″ W. Ascension Island. 420 fathoms. Volcanic sand.

Shell.—Subcylindrically oblong, tumid below the middle and rounded in front, obsoletely striate in the lines of growth, truncate above, where the crown is sharply angulately edged and excavated with a papillary apex. *Sculpture:* Longitudinals—the ordinary ridges and furrows in the lines of growth are feeble, except on the crown, where the old lip-edge scars are strongish, close, and hair-like. Spirals—none, except that round the edge of the crown there runs a sharp angulation in continuation of the outer lip. *Colour* ivory-white, somewhat streaked longitudinally. *Mouth* a little longer than the body, and at the top, to a small extent, enlarged, slightly curved on the inner side, and there in front gibbous; on the outer side it is nearly straight. *Whorls* 3; the last encircles all the rest, which only appear on the crown, where each rises above its predecessor in a round-faced curve; the first is papillary and immersed, the last rises above on the margin in a sharp edge and is a little tumid in front. *Suture* slightly impressed. *Outer lip* rounded and cut off backwards above, angulated at its upper outer corner, straight with a slight medial contraction, rounded and patulous in front; its edge line is very regularly curved. *Top* deeply excavated, with a sharp edge. *Inner lip:* there is a very thin glaze; the line across the body is much curved, the narrowing forward of the body beginning early and being considerable; the pillar is very oblique, subtruncate, very bluntly and faintly toothed, with a narrow expanded sharpish-bordered edge, and an almost imperceptible umbilical chink behind it. H. 0·13 in. B. 0·07. Mouth, breadth at same place 0·01.

The very sharp outer rim of the crown in this species is characteristic. The species slightly resembles a large and stumpy *Cylichna umbilicata* (Mont.), but is posteriorly squarer and more truncate, the whole top is different, the line of the pillar is straight in its obliquity, not roundly hollowed, and there is no spiral sculpture.

10. *Utriculus famelicus*, Watson (Pl. XLIX. fig. 1).

Utriculus famelicus, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 338.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Shell.—Long, narrow, subconically cylindrical with straight outlines, abruptly truncate

[1] ὀρυκτός, excavated.

above, with a deeply impressed papillary apex, rounded and slightly tumid in front, harshly striate above and delicately so below. *Sculpture:* Longitudinals—the lines of growth are very slight, but round the top of the shell is a coronal of folds forming ridges and furrows of about equal strength; these extend over the top and into the hollow crown. Spirals—round the top, harshly scoring the coronal, are four or five deep, but not broad, sharp-cut furrows, parted by flat surfaces of about twice their breadth; below these, to a fourth of the length, there are distant furrows so obsolete as to be almost invisible; below this the whole suface is superficially scratched with delicate sharp-cut fretted furrows parted by broadish flat intervals. *Colour* translucent white. *Mouth* the entire length of the shell, being considerably produced posteriorly, where it is slightly enlarged; in the middle it is narrow, the two sides being almost perfectly parallel, in front it is elongately oval; in its entire shape it resembles a spoon. *Whorls* 4, but the earlier ones are so deeply sunken, and the hole in the crown (where alone they are visible) is so small, that it is difficult to count them; the apex is papillary. *Suture* slight. *Outer lip* rises straight from the crown, with a slight inclination in towards the centre, is narrowly rounded above, and advances straight for about two-thirds of the shell's length, at which point it is slightly expanded, and then becomes somewhat patulous; it sweeps rather freely round to join the pillar. *Top* small, oblique, harshly radiatingly striate and deeply narrowly impressed. *Inner lip* long and straight, slightly convex in front, oblique and slightly concave on the pillar, which is bluntly toothed in front, and has a very narrow scarce patulous prominent edge with a minute furrow behind it. H. 0·18 in. B. 0·06. Mouth, breadth at same place, 0·019.

This species, whose thin and famished look suggested the name chosen, belongs to the group of which the Mediterranean *Utriculus striatula* (Forbes), may be taken as a type, though in that species the features attributed to the subgenus *Sao* (of *Cylichna*) are much more strongly developed. Compared to this species of the Challenger, *Cylichna fijiensis*, E. A. Smith, is broader, not squarely truncate above, and not so plicate round the top of the body. *Utriculus phiala*, A. Adams, from Japan, is not nearly so long and narrow, and is more cylindrical. *Cylichna decussata*, A. Adams, which is like in sculpture, is shorter, less cylindrical, and the outer lip rises much higher behind. *Cylichna pyramidata*, A. Adams, which is puckered above, is much less cylindrical and is smooth in the body.

11. *Utriculus simillimus*,[1] Watson (Pl. XLIX. fig. 2).

Utriculus simillimus, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 340.

September 7, 1874. Torres Straits, North of Australia. 3 to 11 fathoms.

September 8, 1874. Flinders Passage, Cape York, North Australia. 7 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York, North Australia. 8 fathoms. Coral mud.

[1] So called from its resemblance to the young of *Utriculus famelicus*, Watson.

Shell.—Small, short, truncately conical, with straightish outlines, a perforated crown, and a small papillary apex, rounded and tumid in front. *Sculpture:* Longitudinals—the lines of growth are very slight; but round the top of the shell is a coronal of delicate folds forming ridges and furrows of about equal strength; these extend over the top and into the perforation of the crown. Spirals—round the top is a slight but marked constriction; above this the top converges, and is finely scored with small close-set furrows; the rest of the shell is superficially scratched with delicate, sharp-cut, fretted, remote furrows parted by flat surfaces: on the base the furrows are closer and coarser, and the intervals rounded. *Colour* translucent white. *Mouth* the entire length of the shell, being considerably produced posteriorly, where it is enlarged; in the middle it is narrow and slightly bent, in front it is large and oval. *Whorls* 3 to 4; the apex is papillary, but very small, and so deeply immersed as to be doubtfully visible. *Suture* very difficult to distinguish, but apparently impressed. *Outer lip* rises from the inner side of the perforation and bends in over it, so as partially to cover it: it arches freely round and is not at all emarginate; it runs pretty straight forward for about three-fifths of its length, at this point it is slightly constricted and contracted, but immediately bends to the right and curves very regularly round the base, where it is patulous. *Top* contracted, rounded, oblique, harshly radiatingly striate, and deeply narrowly impressed. *Inner lip* convex, tumid in front, oblique and slightly concave on the pillar, which is feebly toothed, and has a very narrow, scarcely patulous, prominent edge, with a minute furrow behind it. H. 0·1 in. B. 0·047. Mouth, breadth at same place 0·024.

This species exceedingly resembles the young of *Utriculus famelicus*, Watson, but is very much broader in proportion to its length. *Cylichna fijiensis*, E. A. Smith, is much larger and slimmer.

12. *Utriculus* (*Tornatina*) *canaliculatus* (Say).

Volvaria canaliculata, Say, Journ. Philadelph. Acad. Nat. Science, vol. v. p. 211.
Bullina canaliculata, Say, Amer. Conch., pl. xix., and (ed. Binney) p. 193, pl. xxxix.
Bulla canaliculata, Gould, Invert. of Massachusetts, p. 166, fig. 97.
Utriculus canalicalutus, Binney's Gould, Invert. of Massachusetts, p. 219, fig. 510.
Bulla (*Tornatina*) *canaliculata*, A. Adams in Sowerby's Thes. Conch., vol. ii. pt. 11, p. 566, sp. 12, pl. cxxi. fig. 25 (*pessime*).
Utriculus canaliculatus, Tryon, Mar. Moll. United States, p. 103, sp. 2, pl. xiii. fig. 212.

Station 113A. September 2, 1873. Lat. 3° 47′ S., long. 32° 24′ 30″ W. Anchorage off Fernando-Noronha. 7 to 25 fathoms. Volcanic sand and gravel.

Habitat.—South Carolina, United States (Say); Massachusetts (Gould).

I identified this species from specimens in the British Museum, which are in poor condition Some doubt having arisen of the correctness of the identification, I asked Mr Edgar A. Smith to re-examine the species for me. He writes: "Yours is a smaller shell, and (I believe) with a deeper

canaliculation, beyond which I can find no difference." Adams (*loc. cit.*) classes this as a *Tornatina*, but it does not belong to that group, for the suture is not really canaliculate, though marginated by a canal. I leave it, however, where he puts it.

13. *Utriculus* (*Tornatina*) *roluta* (Quoy and Gaimard).

Bulla roluta, Quoy and Gaimard, "Astrolabe" Zool., vol. ii. p. 359, pl. xxvi. figs. 33–35.
" " Lamarck, Anim. s. vert. (ed. Desh.), vol. vii. p. 677, sp. 22.
" (*Tornatina*) *roluta*, Adams in Thes. Conch., vol. ii. pt. 11, p. 566, sp. 11, pl. cxxi. fig. 24
Tornatina roluta, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1878, vol. ii. p. 82, No. 29.
" " E. A. Smith, "Alert" Collections, p. 505, No. 94.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—Island of Guam (Quoy and Gaimard); Torres Strait, 30 fathoms (Brazier).

I am indebted to Mr Edgar A. Smith for the identification of this shell. I had overlooked it in the Museum, and it could not be recognised either from the description or from Sowerby's figure. As usual in the small species given in the Thesaurus, his figure has no character, and Quoy's description, which is copied verbatim by Sowerby and by Deshayes in Lamarck, does not mention the double canal on the spire, nor the inner lip's extension on the spire, where it is continued as the under edge of the outer of these canals, nor the sharp fine remote spiral striations which score the whole surface from end to end.

14. *Utriculus* (*Tornatina*) *leptekes*,[1] Watson (Pl. XLIX. fig. 3).

Utriculus (*Tornatina*) *leptekes*, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 327.

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Raine Island, Cape York, North Australia. 155 fathoms. Coral sand.

Shell.—Rather small, thin, oblong, cylindrical, rounded on the shoulder, very fine-pointed, with sinistral upturned apex, narrowed in front, spirally striate, with long, narrow, slowly widening mouth. *Sculpture:* Longitudinals—the lines of growth are very slight and regular. Spirals—the whole surface is scored with sharp-cut fine furrows, which are about half the width of the interstices; round the top of the whorls runs a slight but sharp-edged axial keel. *Colour* almost hyaline white from the extreme thinness of the shell. *Mouth* a little shorter than the shell, very elongately and slightly curvedly pear-shaped, rather narrow above and there channelled. *Whorls* 3, besides 1½ in the sinistral embryonic apex. *Outer lip* very gently curved; its edge line retreats very much above and in front. *Top:* there is a very short scalar spire, in which the first regular whorl is

[1] λεπτηκής, fine-pointed.

elevated and is truncately conical, the second hardly shows above the third; in the middle rises the small sinistral, more than half-turned-over apex; the sutural canaliculation is a shallow rounded furrow, with a sharp-edged external border carinating the whorls. *Inner lip:* there is a thin but distinct labial pad; the curve of the body is convex, and contracts slowly from the top of the mouth to the front, which is not truncated; the pillar is long, oblique, with a small reverted lip and a very slight long-twisted tooth, behind which is a feeble furrow, caused by an impression made in the shell. H. 0·14 in. B. 0·06. Mouth, breadth at same place, 0·02.

This species differs from *Utriculus acrobeles*, Watson, in its narrower form and thinner texture, in its sculpture, in its larger mouth, in its spire, its sutural canaliculation, and its apex, which is more prominent.

15. *Utriculus* (*Tornatina*) *acrobeles*,[1] Watson (Pl. XLIX. fig. 4).

Utriculus (*Tornatina*) *acrobeles*, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 327.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York, North-east Australia. 8 fathoms. Coral mud.

Shell.—Rather small, spirally scored, oval, subcylindrical, bluntly rounded in front, with a low subscalar spire crowned with a minute prominent sinistral apex turned up on its side. *Sculpture:* Longitudinals—there are faint growth-furrows drawn at the top into short very oblique folds. Spirals—the whole surface is scored with fine furrows, which are remote above but closer in front, where the intervening surface is rounded; a rounded keel lies below the suture. *Colour* translucent white. *Mouth* markedly shorter than the shell, straightish, clavate to pear-shaped, narrow and channelled above. *Whorls* 4, exclusive of $1\frac{1}{2}$ of the apex which is sinistral. *Outer lip* straight, very slightly appressed above, where it is separated from the body by the slight shallow sutural canal. *Top:* there is a short distinct subscalar spire, in which the first regular whorl hardly shows, but which is crowned with the small sinistral half-turned-over apex. *Inner lip:* there is a thin but distinct labial pad; the curve of the body is nearly straight, but is convex in front; the pillar is very oblique, broad, flat and patulous, with a very broad, scarcely twisted tooth, which is longitudinally furrowed so as almost to be double: in front of this tooth the pillar is truncated at its junction with the outer lip. H. 0·13 in. B. 0·055. Mouth, breadth at same place, 0·014.

This species differs from *Utriculus avenarius*, Watson, in the shape of the shell and of the spire, and in the apex and pillar. *Utriculus canaliculatus* (Say), is much stumpier, and has a lower spire. The upturned apex is like that of *Odostomia lactea* (Linne).

[1] ἀκροβελής, ending in a point.

16. *Utriculus* (*Tornatina*) *avenarius*,[1] Watson (Pl. XLIX. fig. 5).

Utriculus (*Tornatina*) *avenarius*, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 328.

April 17, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Shell.—Oval, rounded bluntly in front and sharply above where the papillary apex projects, smooth, angulated above round the outside of the channelled suture, with a strongly toothed twisted oblique pillar, and a smallish mouth, which is shorter than the shell. *Sculpture:* Longitudinals—there are faint rounded furrows on the lines of growth. Spirals—on the upper part of all the whorls there seem to be close-set very faint spirals; about the middle of the whorl they become stronger, like very fine remote furrows; a bluntly angulated keel projects axially below the suture. *Colour* translucent white. *Mouth* a good deal shorter than the shell, conically clavate, slightly curved, a little blunt at the top. *Whorls* 4 to 4½, angulated above; each rises distinctly above the one which follows. *Outer lip* almost appressed above, but separated by the deep sutural channel which runs into the top of the mouth: in front it is very patulous, and obliquely truncate backwards, in the middle it is slightly contracted. *Top:* the whole upper part of the shell contracts, and the spire is roundly conical and subscalar, with the glossy round papillary apex rising slightly above all: it is scored with the sutural canal, which is narrow and not deep, but well defined by the sharp keel which lies below it. *Inner lip:* there is a thick prominent labial pad; the curve of the body is convex, and so passes on regularly to the point of the pillar, which is very oblique and carries a strong, twisted, oblique, longitudinally furrowed tooth; between this tooth and the body is a very small furrow. H. 0·22 in. B. 0·1. Mouth, breadth at same place, 0·02.

This species a good deal resembles, not the *Bulla turrita*, Möll., but Sowerby's figure of that species in the Thesaurus, pt. 11, pl. cxxi. fig. 28. In perfectly fresh specimens the spiral furrows, which I have described as very faint, may be distinct; but in the ten Challenger specimens they are only traceable with certainty near the edge of the labial pad. *Utriculus canaliculatus* (Say), is a much smaller and stumpier form, much broader above, with a minute apex turned over on its side.

17. *Utriculus* (*Tornatina*) *aratus*, Watson (Pl. XLIX. fig. 6).

Utriculus (*Tornatina*) *aratus*, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 329.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, off south-west point of Papua. 28 fathoms. Green mud.

Shell.—Small, oblong, truncated at the top, rounded in front but not truncated, with whorls sharply angulated above and furrowed spirally from end to end,[2] a channelled

[1] So called from its having somewhat the appearance of a grain of oats.

[2] Hence the name.

suture, a papillary apex, a longish, concave, toothed, and furrowed pillar, and a small mouth. *Sculpture:* Longitudinals—the lines of growth are very feeble. Spirals—from end to end the shell is scored with small but distinct furrows, which on the front of the shell are rounded, but above sharper, shallower, and fretted; they are parted by flattish surfaces of double their width in front, but much more than this above, where the furrows are slighter: round the top of each whorl runs a sharp upstanding keel, within which lies the deepish and narrow, but at bottom rounded, sutural canal. *Colour* ivory-white, with a dull gloss. *Mouth* barely shorter than the shell, narrow, curved, slowly enlarging, elongately pear-shaped. *Whorls* barely 3. *Outer lip* almost appressed above, but separated by the sutural canal; it does not rise quite to the top of the shell, it is very slightly arched, and the edge is scarcely curved, and is hardly emarginate in front. *Top:* the shell is narrowed and then sharply and flatly truncate; round the edge and coiling in to the centre is a sharp but not expressed keel; the whole interval between the keel of one whorl and that of the next is occupied by the sutural canal, which has a convex slope on the interior side, a rounded bottom, and a perpendicular face on the exterior whorl; the central tip is a (relatively) large, glossy, translucent, flatly rounded prominent dome. *Inner lip:* there is a very thin glaze across the slightly arched body; round the base of the straightish concave pillar coils a strongish tooth, minutely furrowed longitudinally, and with a sharp twisted inner edge; outside the tooth-edge is a strong furrow with a minute umbilical chink. H. 0·083 in. B. 0·041. Mouth, breadth at same place, 0·011.

This species very much resembles the following, but may at once be distinguished by the top.

18. *Utriculus* (*Tornatina*) *amboinensis*, Watson (Pl. XLIX. fig. 7).

Utriculus (*Tornatina*) *amboynensis*, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 330.

October 6, 1874. Amboina. 15 to 25 fathoms.

Shell.—Small, oblong, truncated at the top and a little so in front, with whorls sharply and expressedly angulated above, and very faintly spiralled, a channelled suture, a minute regularly incoiled apex, a shortish, oblique, toothed, and feebly furrowed pillar, and a small mouth. *Sculpture:* Longitudinals—the lines of growth are barely visible. Spirals—a little way below the middle a minute and very shallow furrow is found; below this, at about five times the breadth of the furrow, is another similar, then at half the distance below is another furrow, after which others succeed, becoming more crowded and slightly stronger on to the point of the shell; above there are none of these furrows, only round the top of the whorls runs a sharp keel expressed by a rounded furrow on its outer side and by a deeper and stronger furrow on its inner side. *Colour* translucent glossy white. *Whorls* $3\frac{1}{2}$. *Mouth* barely the length of the shell, narrow, straight, small, enlarging

quickly, but to no great extent. *Outer lip* rather thick, almost appressed above, but separated from the body by the sutural canal; it reaches the top of the shell, but retreats a good deal at this part; its edge line is curved and it is contracted at the middle, in front the edge retreats and is subemarginate on the base, where it is considerably thickened by the extension of the pillar tooth, which is continued round the front within the edge of the lip, and separated from the edge by a minute furrow. *Top:* the shell is slightly contracted, and then sharply and flatly truncate; round the edge and coiling in to the centre is a sharp, expressed keel; the whole interval between one keel and the next is occupied by the deep, perpendicular-faced sutural canal, the horizontal top of the whorl, and the extracarinal furrow; the apex is perfectly flat, and is minute and regularly incoiled. *Inner lip:* a strongish glassy defined callus runs down the rather cylindrical body, disappears in the extracolumellar furrow, and reappears in the extreme edge of the outer lip; a strong oblique tooth twists round the base of the pillar, is flattened back on the pillar, and is continued in a small intralabral callus on the base; behind the pillar edge is a strongish but shallow furrow, but no umbilical chink. H. 0·083 in. B. 0·042. Mouth, breadth at same place, 0·009.

This species is at first sight, and especially in rolled specimens where the sculpture is effaced, deceptively like *Utriculus aratus;* it is really, however, quite different, and in particular the difference may at once be recognised in the top of each. The species seems considerably to resemble *Bulla* (*Tornatina*) *polita*, A. Adams, from Manilla, but the lip is not posteriorly produced.

19. *Utriculus* (*Tornatina*) *pachys*,[1] Watson (Pl. XLIX. fig. 8).

Utriculus (*Tornatina*) *pachys*, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 331.

Station 169. July 10, 1874. Lat. 37° 34′ S., long. 179° 22′ E. North-east from New Zealand. 700 fathoms. Blue mud. Bottom temperature 40° F.

Shell.—Rather large, gibbously oval, being tumid in front and contracted upwards, truncated above, where the edge is carinated and furrowed, with an impressed top and a papillary apex. *Sculpture:* Longitudinals—the lines of growth are few, sinuous, and very slight. Spirals—round the edge of the impressed top is a rounded keel, with an exterior strongish rounded furrow, outside of which is a narrow sharpish keel; within the apical pore the whorls are sharply keeled above the channelled suture; the only other trace of spiral striation is behind the outer lip, where the fresh shell shows some trace of a spiral texture. *Colour* horny yellowish white. *Mouth* club-shaped, large, the full length of the shell being a little produced posteriorly, shortly curved across the body, ample in front. *Whorls* 4, the earlier ones only indistinctly visible in the impressed top; the apex

[1] παχύς, broad.

is papillary. *Suture* deeply channelled, with a sharp keel above it: this keel runs out not above but on the edge of the funnel-shaped top. *Outer lip* rises from the inner side of the apical depression and slopes flatly outwards, forming thus the patulous opening of the funnel-shaped depression; at the apical keel it is angulated; from this point it makes a convex sweep, which has a slight contraction about the middle; it is patulous and somewhat elliptical in front. *Top* nearly flat, only the outer lip rises slightly above the level; the apical depression is funnel-shaped, having a wide converging mouth and a small, not deep, hole in the middle, with a papillary apex in the centre. *Inner lip:* a broadish distinct white glaze extends across the body, on which the curve of the lip is very regularly convex on to the narrow, long, low, and twisted pillar tooth; beyond this the pillar lip is slightly concave, narrow, a little patulous, and appressed. H. 0·23 in. B. 0·14. Mouth, breadth at same place, 0·04.

I do not know any other *Utriculus* so rounded in its outlines as this; it is also very broad relatively to its length.

6. *Cylichna*, Lovén, 1846.

Species.

1. *Cylichna alba* (Brown).
2. *Cylichna arachis* (Quoy and Gaimard).
3. *Cylichna cuticulifera* (E. A. Smith).
4. *Cylichna cylindracea* (Pennant).
5. *Cylichna ovata*, Jeffreys.
6. *Cylichna discus*, Wats.
7. *Cylichna tahitiensis*, Wats.
8. *Cylichna crispula*, Wats.
9. *Cylichna noronyensis*, Wats.
10. *Cylichna reticulata*, Wats.
11. *Cylichna subreticulata*, Wats.
12. *Cylichna labiata*, Wats.
13. *Cylichna* (*Volvula*) *paupercula*, Wats.
14. *Cylichna* (*Volvula*) *sulcata*, Wats.
15. *Cylichna* (*Mewestia*) *bizona*, A. Adams.

1. *Cylichna alba* (Brown).

Volvaria alba, Brown, Ill. Conch., p. 3, pl. xix. figs. 43, 44.
Cylichna alba, Lovén, Ind. Moll. Scandinav., Öfversigt Vet. Akad. Förhandl., 1846, p. 142, No. 64.
Bulla (*Cylichna*) *alba*, A. Adams in Sowerby's Thes. Conch., vol. ii. pt. 11, p. 591, sp. 105, pl. cxxv. fig. 137.
„ *triticea*, Gould, Invert. Massachusetts, p. 165, fig. 98.
Cylichna alba, Mörch's West Greenland Moll. in Rink's Greenland, No. 17.
„ „ Jeffreys, Brit. Conch., vol. iv. p. 417, pl. viii. fig. 1a (The odontophore), vol. v. p. 223, pl. xciii. fig. 6.
„ „ Binney's Gould, Invert. Massachusetts, p. 220, fig. 98.
„ „ Gwyn Jeffreys, Moll. Europe and East N. Amer., Ann. and Mag. Nat. Hist., 1872, ser. 4, vol. x. p. 241, No. 220.
„ „ Gwyn Jeffreys, "Valorous" Exped. Gastrop., Ann. and Mag. Nat. Hist., 1877, ser. 4, vol. xix. p. 333.
„ „ Gwyn Jeffreys, Arctic Exped. Post-Tert. Fossils, Ann. and Mag. Nat. Hist., 1877, ser. 4, vol. xx. p. 237.

Cylichna alba, Gwyn Jeffreys, Biological Address Brit. Assoc., 1877, p. 4.
" " G. O. Sars, Moll. Arct. Norv., p. 283, pl. xvii. figs. 15, 16.
" " Leche, Nova Semlja, &c., Hafs-Moll., Kongl. Svensk. Vet.-Akad., 1878, p. 72, No. 146.
" " Seguenza, Form. Terz. Calabria, pp. 252, 351.
" " Gwyn Jeffreys, Moll. "Triton" Exped., Proc. Zool. Soc. Lond., 1883, p. 393.
" " Gwyn Jeffreys, Shells Bridlington Clay, Quart. Journ. Geol. Soc. Lond., 1884, p. 320.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 to 500 fathoms. Volcanic mud.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Habitat.—The whole Boreal Atlantic from Cape Cod (Gould) and Greenland (Mörch), to Great Britain and Spitzbergen (Jeffreys); Norway (Sars); Nova Zembla (Leche); and Japan (Jeffreys), from 12 to 1400 fathoms.

Fossil.—From the Norwich Crag (Jeffreys), and the Middle Pliocene of Calabria (Seguenza) onwards.

The identification of the specimens from both the stations mentioned above is a little doubtful. The shells are young and not in very good condition, the form is perhaps in both cases a little narrower than is usual in the species; the apex, too, is somewhat more funnel-like and impressed, but I have seen specimens from Norway very similar. Leche mentions that in dead specimens the apex is soon decorticated, which greatly changes the aspect of the shell. Dr Jeffreys says the species was found in Japan by Captain St John, but neither Lischke nor Dunker give it in their Japanese Mollusca.

2. *Cylichna arachis* (Quoy and Gaimard).

Bulla arachis, Quoy and Gaimard, "Astrolabe" Zool., vol. ii. p. 361, pl. xxviii. figs. 28–30.
" (*Cylichna*) *arachis*, A. Adams in Sowerby's Thes. Conch., pt. 11, vol. ii. p. 590, sp. 102, pl. cxxv. figs. 134, 135.
Cylichna arachis, Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 226, No. 255.
" " Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1878, vol. ii. p. 79, No. 20.
" " E. A. Smith, "Alert" Collections, p. 86, No. 121.

April 17, 18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
May 1874. Port Jackson, Sydney. 6 to 7 fathoms.

Habitat.—New Holland (Adams); Tasmania, New South Wales, New Zealand (British Museum); Port Jackson, Sydney (Angas); New Guinea 8 fathoms, Cape York North Australia 6 fathoms (Brazier).

This species is not unlike *Cylichna cylindracea* (Pennant), but is larger, and is much less truly cylindrical, being attenuated in front and behind and rounded in the middle; the spirals, too, are coarser, especially in front.

3. *Cylichna cuticulifera* (E. A. Smith).

Haminea cuticulifera, E. A. Smith, Ann. and Mag. Nat. Hist., ser. 4, 1872, vol. ix. p. 350.
Bulla (Haminea) cuticulifera, Angas, Port Jackson Moll. (additional), Proc. Zool. Soc. Lond., 1877 p. 189, No. 134.

April 17, 1874. Port Jackson, Sydney. 2 to 10 fathoms.
April 23, 1874. Port Jackson, Sydney. 6 to 15 fathoms.
July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—New Zealand and Port Jackson (E. A. Smith).

This species is peculiar in combining a very cylindrical form with a very narrowly reverted and truncated pillar lip. Mr E. A. Smith, who kindly examined my specimens, remarks that the British Museum "specimens have the apical foramen covered by a thin callosity," which is not present in most of the Challenger specimens. It seems to be very easily abraded.

4. *Cylichna cylindracea* (Pennant).

Bulla cylindracea, Pennant, Brit. Zool., vol. iv. p. 117, pl. lxx. fig. 85.
„ *cylindrica*, Bruguière, Encycl. méthod., vers, vol. i. p. 371, sp. 1 (excl. foss.)
„ *convoluta*, Brocchi, Coq. foss. subappen., vol. ii. p. 276, pl. i. fig. 7.
„ *cylindracea*, Dillwyn, Catalogue, vol. i. p. 496, sp. 57.
„ „ Wood, Ind. Test., p. 96, pl. xviii. fig. 57.
„ „ Lamarck, Anim. s. vert. (ed. Desh.), vol. vi. p. 675, sp. 18.
„ *convoluta*, Philippi, Enum. Moll. Sicil., vol. i. p. 123, vol. ii. p. 97.
Cylichna cylindracea, Lovén, Ind. Moll. Scandinav., Öfversigt. Kongl. Vet.-Akad. Förhandl., 1846, p. 142, No. 63.
Bulla cylindracea, S. Wood, Crag. Moll., Palæont. Soc., vol. i., p. 175, pl. xxi. fig. 1.
„ (*Cylichna*) *cylindracea*, A. Adams in Sowerby's Thes. Conch., pt. 11, vol. ii. p. 590, pl. cxxv. fig. 137.
Cylichna cylindracea, Forbes and Hanley, vol. iii. p. 508, pl. cxiv.B. fig. 6, pl. V.V. fig. 3.
„ „ Jeffreys, Brit. Conch., vol. iv. p. 415, pl. viii. fig. 1, vol. v. pl. xciii. fig. 4.
„ „ Weinkauff, Conch. Mittelmeeres, vol. ii. p. 194, sp. 1.
„ „ Monterosato, Enumerazione, p. 50.
„ „ G. O. Sars, Moll. Arct. Norv., p. 283, pl. xvii. fig. 12, pl. xi. *bis*, fig. 4.
„ „ Seguenza, Form. Terz. Calabria, pp. 252, 318, 351.

Station 135c. October 17, 1873. Lat. 37° 25′ 30″ S., long. 12° 28′ 30″ W. Nightingale Island, Tristan da Cunha. 110 fathoms.

Station 344. April 3, 1876. Lat. 7° 54′ 20″ S., long. 14° 28′ 20″ W. Ascension Island. 420 fathoms. Volcanic sand.

Habitat.—The whole North-east Atlantic, from the Lofotens to the Mediterranean, the Canaries, and Mogador.

Fossil.—In the Pliocene of the whole of Central and Southern Europe.

The discovery of this species so far south is interesting, but the depth at which it occurred at both Stations is an important fact in this connection. The specimen from Station 135 lacks the characteristic sculpture of the species, but similar smooth specimens are not very uncommon wherever the species is abundant. The specimens from Station 344 are young shells, and the larger has unfortunately been crushed since I determined the species, but I have no doubt that the determination was correct. I am hardly so sure that the specimen from Station 135 is correctly determined, and I had originally separated it and described it as new under the name of *Cylichna macra*, but subsequent revision made the differences on which the species was founded seem questionable.

5. *Cylichna ovata*, Jeffreys (Pl. XLIX. fig. 9).

Cylichna conulus (not of S. Wood nor of Weinkauff), var. Gwyn Jeffreys, Brit. Conch., vol. iv. p. 414, and vol. v. p. 223.
„ *ovata*, Gwyn Jeffreys, Brit. Assoc. Report, 1870, "Porcupine" Exped., p. 156.
„ „ Gwyn Jeffreys, Brit. Assoc. Report, 1880, "Travailleur" Exped., p. 10, No. 172.
„ „ Gwyn Jeffreys, "Washington" Exped., Ann. and Mag. Nat. Hist., 1882, ser. 5, vol. x. p. 34.
Cylichna ovata, Seguenza, Form. Terz. Calabria, p. 252.

(?) Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of Azores. 1000 fathoms. Bottom temperature 39°·4 F. Pteropod ooze.

(?) Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Fayal, Azores. 450 fathoms. Volcanic mud.

(?) Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. San Miguel, Azores. 1000 fathoms. Volcanic mud.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Pernambuco. 350 fathoms. Red mud.

Habitat.—North-east Atlantic, in deep water (Jeffreys).

Fossil.—Middle Pliocene of Italy (Seguenza).

6. *Cylichna discus*, Watson (Pl. XLIX. fig. 10).

Cylichna discus, Watson, Prelim. Report, pt. 19, Journ. Linn. Soc. Lond., vol. xvii. p. 319.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Narrowly cylindrical, truncated in front like *Cylichna alba* (Brown), smooth, thin, polished, with a small disk-like minutely perforated top. *Sculpture:* Longitudinals—there are very faint and slight lines of growth. Spirals—there are some very doubtful indications of a coarse spiral structure in the texture of the shell. *Colour* milky white and glossy. *Mouth* the full length of the shell but not more, extremely narrow with lips nearly parallel till they diverge in front, the inner lip following the slow basal contraction, while the outer expands a very little, as is the case in *Cylichna umbilicata* (Mont.); at the upper end is a small, narrow, but deepish rounded sinus. *Outer lip:* its edge is very straight, retreating a little quickly above and slightly in front; its direction is straight, with the very slight bend to the right spoken of above. *Top* a little contracted, rounded, with a sort of thickened pellucid disk[1] which is almost perfectly horizontal, so that the whole top of the body-whorl and the upper corner of the mouth are on the same level: in the centre is a minute closed pore. *Inner lip:* there is a thin narrow glaze which thickens and expands in front: it is not expanded on the top. *Pillar* is short, slightly oblique and twisted, with a strongish defined tooth, in front of which it is rather abruptly truncate. H. 0·156 in. B. 0·066. Mouth, breadth at same place, 0·014.

Cylichna protracta (Gould), is very like this in front, but rises much higher above. *Cylichna cylindracea* (Pennant), is slightly slimmer or narrower in proportion to length, has the body-whorl a little smaller, and the mouth slightly broader, lacks the slight posterior narrowing, and is squarely truncate behind, while here the shell is rounded. The Challenger species, too, quite wants the very peculiar form of the upper corner of the mouth which is characteristic of *Cylichna cylindracea*. *Cylichna alba* (Brown), of the same size, is rounder and less cylindrical, being more attenuated above especially; the mouth is extended above the top of the shell; the top of the body-whorl is more oblique and less truncated.

7. *Cylichna tahitiensis*, Watson (Pl. XLIX. fig. 11).

Cylichna tahitensis, Watson, Prelim. Report, pt. 19, Journ. Linn. Soc. Lond., vol. xvii. p. 320.

September 28, 1875. Tahiti Harbour, near the reefs. 20 fathoms.

Shell.—Cylindrical, thin, glassy, spirally striate from end to end, with a small body, rounded outlines, no depression nor central point at the apex, and a toothless but abruptly truncated and prominent pointed pillar. *Sculpture:* Longitudinals—there are scarcely perceptible lines of growth. Spirals—the whole surface is covered with fine grooves not quite regular, about $\frac{1}{200}$ inch apart, but weaker and more crowded in the middle than at either extremity. *Colour* bluish transparent glossy white. *Mouth* rather large and long. *Outer lip* has a sinus just above the body, rises and is angulated at the outer upper corner of the shell: from this point its edge advances and its line is slightly convex, tending in

[1] Hence its name.

front to become straight; at the lower outer corner it is angulated, and across the base is abruptly truncate. *Inner lip* has a very thin glaze, it is flatly convex on the body, straight and elongately oblique on the pillar, which presents no tooth, but has a thin, defined, hardly twisted edge, and is abruptly cut off in front, being there a strong prominent point. H. 0·083 in. B. 0·044. Mouth, breadth at same place, 0·007.

This is very possibly a young shell.

8. *Cylichna crispula*, Watson (Pl. XLIX. fig. 12).

Cylichna crispula, Watson, Prelim. Report, pt. 19, Journ. Linn. Soc. Lond., vol. xvii. p. 321.

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143° 59′ 38″ E. Raine Island, Cape York, North Australia. 155 fathoms. Coral sand.

Shell.—Narrowly oblong, more contracted above than below, with the greatest breadth below the middle, obliquely truncate above and below, thin, translucent, glossy, very faintly spirally striate all over; the top is like that of a *Volvula*, but beside the prominent lip the axis is perforated: there is a strong pillar tooth. *Sculpture:* Longitudinals—the lines of growth are very slight and unequal. Spirals—the whole surface is covered with very slight, superficial, fretted, rather unequal, and somewhat remote furrows. *Colour* translucent glossy milk-white. *Mouth* long and narrow above, rising and retreating at the top of the shell, widening in front, but not very large even there. *Outer lip* rises from the edge of the axial pore, and forms the top of the shell; at this point it is narrowly rounded and retreats very much, below this its edge advances and its direction is obliquely forward to the right; in front it retreats rather rapidly and sweeps freely round the base to the point of the pillar; it is a little bent in about the middle, but is very patulous on the base. *Top* is very small, and fully half of it is covered by the lip, but behind this there is a minute conical depression with a defined rounded edge. *Inner lip* is regularly arched on the body, where there is a thin glaze, which becomes thick on the pillar with a twisted sharply-defined edge. *Pillar* bears a strong, almost direct tooth, with a well-marked broad furrow between it and the lip edge. H. 0·16 in. B. 0·075. Mouth, breadth at same place, 0·017.

This species is deceptively like a *Volvula*. In general form it resembles *Atys parallela* (Gould), but is smaller, is more contracted above, and is there minutely perforated; the tooth in front, too, is stronger, and the spiral sculpture is much finer.

9. *Cylichna noronyensis*, Watson (Pl. L. fig. 1).

Cylichna noronyensis, Watson, Prelim. Report, pt. 19, Journ. Linn. Soc. Lond., vol. xvii. p. 322.

Station 113A. September 2, 1873. Lat. 3° 47′ S., long. 32° 24′ 30″ W. Anchorage off Fernando de Noronha. 7 to 25 fathoms. Volcanic sand and gravel.

Shell. — Small, oval, broadest below the middle, narrowing to both ends, but especially upwards, thin, transparent, and glossy, rather strongly and remotely striate spirally above and below, the narrow mouth is longer than the body, the top is conically depressed, the straight, slightly oblique, scarcely toothed pillar has behind it a minute furrow and chink. *Sculpture:* Longitudinals—there are fine hair-like lines of growth. Spirals—the middle of the shell is smooth; in front there are about eight strongish remote crimped furrows: these become rather crowded on the base; above there are about four similar furrows. *Colour* hyaline white. *Mouth* long, narrow, curved throughout its whole length. *Outer lip* rises very slightly above the body, is rounded, with a very slight angulation at the outer corner, from which point to the corner of the base it is a little flatly curved; on the base the curve is rapid, and the shell is there slightly emarginate. *Top* is small, oblique, and has a conical depression in the middle behind the lip. *Inner lip* flatly curved on the body; the pillar is almost quite straight but a little oblique in its direction. There is a very faint appearance of a tooth on it in front, and behind it is a small furrow and chink. H. 0·07 in. B. 0·04. Mouth, breadth at same place, 0·01.

This may very possibly be a young shell, but among the Bullidæ it is impossible to judge whether a solitary specimen is full-grown or not. Compared with the young of *Bulla semilævis*, Seg., this is much slimmer in form, with a longer and smaller body, it is more narrowed and pointed at both ends, and is much more strongly and definitely striate. Compared with the young of *Bulla hydatis*, Linne, besides these same points of distinction, there is the strong curve of the line of the mouth, which in that species is nearly straight. *Atys speciosa*; A. Adams, is in form very like, but is shorter and broader, and more contracted posteriorly; and this Challenger species is not an *Atys*. Something without colour between *Cylichna marmorata*, A. Adams, and *Cylichna bizona*, A. Adams, would be very near. *Cylichna luticola*, C. B. Adams, is much more cylindrical.

10. *Cylichna reticulata*, Watson (Pl. L. fig. 2).

Cylichna reticulata, Watson, Prelim. Report, pt. 19, Journ. Linn. Soc. Lond., vol. xvii. p. 323.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, off Cape York. 8 fathoms. Coral mud.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Near Cape York, North Australia. 6 fathoms. Coral mud.

Shell.—Small, oblong to subcylindrical, harshly reticulated, white, with a narrow scarcely curved mouth, a lip produced posteriorly, an oblique perforated top, a subpatulous direct and oblique pillar lip reverted on a narrow umbilicus. *Sculpture:* Longitudinals—the whole surface is scored with strong rounded furrows, which follow the lines of growth and are parted by interstices about once and a half their width. Spirals—similar to the longitudinals, but rather stronger and further apart, are spiral furrows, the intersection of

which with the longitudinals cuts the surface into square reticulations. *Colour* translucent white. *Mouth* long and narrow, widening very little in front, curved a very little throughout its whole length. *Outer lip* rises above the top, bending a little in toward the perforation; in direction it is slightly curved throughout: its edge retreats somewhat above, in the middle, and in front. *Top* is small, oblique, with a slightly expressed, narrowish, thickened, harshly radiatingly scored rim, within which is a funnel-shaped perforation. *Inner lip:* a thickish glaze crosses the well-arched body and runs out on the slightly patulous, direct, oblique, prominent, and narrow-edged pillar, behind which and half covered by it is a furrow running up into the umbilicus. H. 0·11 in. B. 0·05. Mouth, breadth at same place, 0·009.

This is a remarkable species, with very exceptional sculpture. The apical pore is so choked with impacted sand that it is impossible to say whether the spire be visible or not.

11. *Cylichna subreticulata*, Watson (Pl. L. fig. 3).

Cylichna subreticulata, Watson, Prelim. Report, pt. 19, Journ. Linn. Soc. Lond., vol. xvii. p. 323.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. West of Cape York, North Australia. 6 fathoms. Coral mud.

Shell.—Small, oblong, subreticulated, white, with a narrow curved mouth, a lip slightly produced posteriorly, an oblique perforated top, a short patulous subtwisted pillar, round whose base is a slight fold, and whose edge is appressed. *Sculpture:* Longitudinals—there are irregular and not strong lines of growth. Spirals—there are coarse, but feeble, rather remote furrows which cover the whole surface. *Colour* translucent white. *Mouth* curved, a little broader above and below than in the middle. *Outer lip* rises very little above the top, bending out, a very little yet at once, from the apical pore: it is strongly curved throughout. *Top* is small, slightly oblique, with a scarcely definite feebly scored rim, within which is a funnel-shaped perforation. *Inner lip:* a thin glaze, with an irregular edge, spreads across the body, which is well rounded: round the top of the oblique pillar is a feeble furrow and fold; the lip edge is appressed, and has behind it a very slight depression, but no umbilicus. H. 0·106 in. B. 0·056. Mouth, breadth at same place, 0·013.

This species is very like *Cylichna reticulata*, but differs from it in that the shell is broader in proportion to length; the mouth is broader and more curved; the strongly reticulated sculpture is absent, what there is being much feebler and less regular,[1] this is especially the case with the longitudinal furrows; the outer lip rises less high behind and does not lean in at all to the perforation; the edge of the top is less oblique; the pillar lip has a fold at its base, and the lip edge is reflected and appressed, and has no umbilicus behind it.

[1] Hence the name.

12. *Cylichna labiata*, Watson (Pl. L. fig. 4).

Cylichna labiata, Watson, Prelim. Report, pt. 19, Journ. Linn. Soc. Lond., vol. xvii. p. 324.

October 6, 1874. Amboina. 15 to 25 fathoms.

Shell.—Small, strong, oval, obliquely truncate above, where the apex is impressed, bluntly pointed in front, obscurely angulated above the middle, umbilicate, finely and closely striate, with a thickened lip posteriorly produced. *Sculpture:* Longitudinals—there are fine, straight, hair-like unequal lines of growth. Spirals—there are fine spiral lines, which at the top and bottom of the shell are a little strong and remote, but in all the centre part are very faint and crowded, and above the middle, where a very blunt angulation occurs, they are nearly invisible. *Colour* translucent white, with a tinge of brown, which on the outer lip and base is ochreous. *Mouth* long, curved, narrow, a little enlarged in front. *Outer lip* rises perpendicularly from the outer edge of the impressed apex, is produced posteriorly, where it bends in toward the apex, and is patulous and almost emarginate; its direction and edge line are both somewhat flexuous; in front it is contracted in towards the pillar, forming at the point of the base a narrow, patulous, but not emarginate, gutter; the edge is sharp, but is strengthened a little way within by a small longitudinal rib, which is of a ruddy white colour. *Top* obliquely truncate, small, with a blunt keel round the edge of the minute, shallow, conical depression, which is half choked by the outer lip. *Inner lip:* a very thin glaze extends across the gibbously and convexly curved body; there is a slight angle at the top of the pillar, which is direct, a little oblique, hardly patulous, scarcely twisted, very narrow, most feebly toothed and truncate in front; behind the sharp edge is a small but deep umbilicus. H. 0·16 in. B. 0·09. Mouth, breadth at same place, 0·01.

This is a very peculiar form, extremely like an *Ovula* both in shape and in the thickness of the outer lip, the edge of which, however, is sharp.

13. *Cylichna* (*Volvula*) *paupercula*, Watson (Pl. L. fig. 5).

Cylichna (*Volvula*) *paupercula*, Watson, Prelim. Report, pt. 19, Journ. Linn. Soc. Lond., vol. xvii. p. 325.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Shell.—Small, cylindrically oblong, with a short, blunt, but pointed top, white, faintly spiralled. *Sculpture:* Longitudinals—there are fine close-set lines of growth. Spirals—the whole shell is scored with fine, shallow, remote, scarcely fretted furrows. *Colour* ivory-white. *Mouth* arched, narrow above and throughout the greater part of its length, but widening in front, where the body of the shell contracts on the base; above, it rises

beyond the top of the body, and in front goes slightly beyond the point of the pillar. *Outer lip* is gently curved in the middle, with a quick bend at either end; its edge seems to be nearly level, but emarginate in front. *Top* contracts rather quickly to a small central tip. *Inner lip:* a pretty distinct glaze covers the body; in front of this the narrow pillar projects somewhat obliquely, with a slight twist and prominent edge, and is rather abruptly cut off at the point; behind it lies a small furrow running up into a minute umbilical chink. H. 0·062 in. B. 0·03. Mouth, breadth at same place, 0·008.

The *Volvula acuta*, d'Orb. (*Bulla*), a Cuban species, is much sharper and more hunchy. *Volvula angustata*, A. Adams, is more cylindrical and less stumpily pointed above.

14. *Cylichna* (*Volvula*) *sulcata*, Watson (Pl. L. fig. 6).

Cylichna (*Volvula*) *sulcata*, Watson, Prelim. Report, pt. 19, Journ. Linn. Soc. Lond., vol. xvii. p. 326.

September 7, 1874. Torres Strait, north of Australia. 3 to 11 fathoms.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Torres Strait. 8 fathoms. Coral mud.

Shell.—Oblong, very symmetrically curved, bluntly pointed above, and still more bluntly in front, white, very faintly spiralled, but with the centre part of the body plain. *Sculpture:* Longitudinals—there are very slight lines of growth. Spirals—at the lower end of the shell there are about ten very slight fretted spiral furrows; those above are rather sparse and irregular, those toward the point are crowded and feeble; the larger part of the shell is plain, while above are a few spirals still feebler than those in front. *Colour* translucent white. *Mouth* arched; about the middle the arch is flattened and narrowed, broadening a very little above and somewhat more in front; above, it rises bluntly beyond the top of the body, and in front it just passes the point of the pillar. *Outer lip* is very little curved in the middle, but bends in toward the axis at either end; its edge retreats a little above, but only very slightly in front. *Top* is bluntly and roundly pointed. *Inner lip:* there is a small transparent pointed pad where the outer lip rises from the tip; the curve of the body is regular, but just at the top of the pillar is a slight contraction; the pillar, which has a very faint tooth at its base, is slightly oblique, and markedly twisted out to the very point; it has a flat expanded and broadening front, with a sharp reverted edge, behind which is a rather strongly marked furrow,[1] but no umbilicus. H. 0·074 in. B. 0·034. Mouth, breadth at same place, 0·005.

In form this somewhat resembles *Volvula angustata*, A. Adams, but the sculpture is quite different. Compared to *Cylichna acuminata*, A. Adams, the apex of the Challenger species is not spike-like and the spiral striæ are stronger.

[1] It is from this feature the name of the species is derived.

15. *Cylichna* (*Mnestia*) *bizona*, A. Adams.

Bulla (*Cylichna*) *bizona*, A. Adams in Sowerby's Thes. Conch., pt. 11, vol. ii. p. 595, sp. 116, pl. cxxv. fig. 148.
Cylichna (*Mnestia*) *bizona*, Adams, Genera, vol. ii. p. 10.
Mnestia bizona, Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1878, vol. ii. p. 81, No. 25.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Habitat.—China Seas (Sowerby and British Museum); Torres Strait, 6 to 30 fathoms; North-east Australia, 13 fathoms (Brazier).

7. *Philine*,[1] Ascanias, 1792.

Species.

1. *Philine angasi* (Crosse).
2. *Philine aperta* (Linne).
3. *Philine orientalis*, A. Adams.
4. *Philine quadrata* (S. Wood).

1. *Philine angasi* (Crosse).

Bullæa angasi, Crosse, Journ. de conch., 1865, vol. xiii. p. 38, pl. ii. fig. 8.
Philine angasi, Angas, South Austral. Moll., Proc. Zool. Soc. Lond., 1865, p. 189, No. 222.
" " Angas, Port Jackson Moll., Proc. Zool. Soc. Lond., 1867, p. 227, No. 263.
" " Brazier, "Chevert" Exped. Shells, Proc. Linn. Soc. New South Wales, 1878, vol. ii. p. 88, No. 54.
" " Reeve, Conch. Icon., vol. xviii. pl. i. fig. 4.

April 17, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Habitat.—Port Jackson and the Australian coasts in general (Angas); Torres Strait (Brazier).

2. *Philine aperta* (Linne).

Bulla aperta, Linne, Syst. Nat., p. 1183, No. 376.
Martini, Conch. Cab., vol. i. p. 266, Vignette, fig. 1, vol. x. p. 119, pl. cxlvi. fig. 1355.
" " Müller, Zool. Dan., vol. iii. p. 30, pl. ci. figs. 1–5.
" " Bruguière, Encycl. méthod., vers, vol. i. p. 375, sp. 7.
" " Dillwyn, Catalogue, vol. i. p. 477, sp. 14.
" " Wood, Ind. Test., p. 92, pl. xviii. fig. 14.
Bullæa aperta, Lamarck, Anim. s. vert. (ed. Desh.), vol. vii. p. 664, sp. 1.
" *planciana*, Philippi, Enumeratio Moll. Sicil, vol. i. p. 121, vol. ii. p. 94, pl. xx. fig. 2.

[1] One or two undetermined species, of which the animal is preserved in spirits and requires dissection, will be published later.

Bulla (Philine) quadripartita, A. Adams in Sowerby's Thes. Conch., pt. 11, vol. ii. p. 600, sp. 133, pl. cxxv. fig. 159.
Philine aperta, Forbes and Hanley, Brit. Moll., vol. iii. p. 539, pl. cxiv.E. fig. i., and pl. UU. fig. 1.
Bulla aperta, Hanley, Ipsa Linn. Conch., pp. 203, 502.
Philine aperta, Jeffreys, Brit. Conch., vol. iv. p. 457, pl. viii. fig. 7, and vol. v. pl. xcvi. fig. 8.
" " Weinkauff, Conch. Mittelmeer, vol. ii. p. 181, sp. 1.
" " Monterosato, Enumerazione, p. 52.

February 10, 1873. Tenerife, Canaries. 78 fathoms.
July 28–31, 1873. St Vincent, Cape Verdes. 7 to 25 fathoms.

Habitat.—Great Britain, Mediterranean (Jeffreys); Cape of Good Hope (?) (Linne); Philippines (Reeve); Luzon (Sowerby).

3. *Philine orientalis*, A. Adams.

Philine orientalis, A. Adams, Proc. Zool. Soc. Lond., 1854, p. 94, No. 3.
" " Reeve, Conch. Icon., vol. xviii. pl. ii. fig. 11.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Off Malanipa, Basilan Strait, Philippines. 10 to 20 fathoms. Sand.

Habitat.—Eastern Seas (A. Adams).

4. *Philine quadrata* (Searles Wood).

Bullæa quadrata, Searles Wood, Ann. and Mag. Nat. Hist., 1839, ser. 1, vol. iii. p. 461, pl. vii. fig. 1.
" " Searles Wood, Crag. Moll., Palæont. Soc., vol. i. p. 179, pl. xxi. fig. 9.
Philine scutulum, Lovén, Ind. Moll. Scandinav., Öfvers. Kongl. Vet.-Akad. Förhandl, 1846, p. 9.
" *quadrata*, Forbes and Hanley, Brit. Moll., vol. iii. p. 541, pl. cxiv.E. figs. 2, 3.
Bulla (Philine) scutulum, A. Adams in Sowerby's Thes. Conch., pt. 11, vol. ii. p. 601, pl. cxxv. fig. 164.
Philine quadrata, Gwyn Jeffreys, Brit. Conch., vol. iv. p. 452, and vol. v. p. 224, pl. xcvi. fig. 4.
" " G. O. Sars, Moll. Arct. Norv., p. 299, pl. xviii. fig. 9, pl. xii. *bis*, fig. 7.

Station 75 (?). July 2, 1873. Off Fayal, Azores. 50 to 90 fathoms (so marked).
Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. Off San Miguel, Azores. 1000 fathoms. Globigerina ooze.

The specimens of this species, which are but fragments, were kindly identified for me by Dr Gwyn Jeffreys.

Family APLYSIADÆ, d'Orbigny, 1853.

Genera. 1. *Aplysia*, Linne. 2. *Dolabrifera*, Gray.

1. *Aplysia*, Linne, 1767.

Aplysia depilans, Linne.

Aplysia depilans, Linne, Syst. Nat., ed. 12, p. 1082, No. 1.
Laplysia depilans, Lamarck, Anim. s. vert., vol. vi. (2) p. 39, and (ed. Desh.) vol. vii. p. 688, sp. 1 (*Aplysia*).
Aplysia depilans, Deshayes, Encycl. méthod., vers, vol. ii. p. 60, sp. 4, pl. lxxxiii. figs. 1, 2, pl. lxxxiv. figs. 1, 2.
" " Philippi, Enumeratio Moll. Sicil., vol. i. p. 124, sp. 6, vol. ii. p. 97, sp. i.
" *petersoni*, Sowerby, Genera, vol. ii. pl. clv. fig. 1.
" " and *Aplysia depilans*, Reeve, Conch. Icon., vol. xvii. pl. ii. figs. 1, 6.
" *depilans*, Jeffreys, Brit. Conch., vol. v. p. 7, sp. 2, pl. xcvii. fig. 2.
" " Monterosato, Enumerazione, p. 52.

December 1873. Simons Bay, Cape of Good Hope. 15 to 20 fathoms.

Habitat.—Guernsey, France, the Mediterranean (Jeffreys); Madeira (Watson).

Mr Gwyn Jeffreys was good enough to examine this *Aplysia* for me, its occurrence at the Cape making its careful identification desirable. It exactly corresponds with a specimen in the British Museum marked "*Aplysia Petersoni*, Sow.," a synonym of Linne's species.

2. *Dolabrifera*, Gray, 1847.

Dolabrifera triangularis, Watson (Pl. L. fig. 7).

Dolabrifera triangularis, Watson, Prelim. Report, pt. 20, Journ. Linn. Soc. Lond., vol. xvii. p. 346.

December 1873. Simons Bay, Cape of Good Hope. 15 to 20 fathoms.

Shell.—Much arched, corrugated, porcellanous, dull, and scored on the upper surface with sharp strong lines of growth, on the under surface lustrous and amorphous, with a strong but irregular oblique longitudinal furrow and rough radiating lines toward the back; it resembles the blade of a fleam, being triangular, with a straight back, the handle (where the nucleus is) in front, and the point (a bluntly rounded one) on the left. Round the nucleus there is an amorphous expansion and thickening; across the blade obscure and unequal rays diverge from a point behind the nucleus. The back of the blade is thick and blunt, the other two sides are bluntly bevelled to a sharp edge. H. 0·43 in. B. 0·21. Height of the arch, 0·1. Greatest breadth behind, 0·3.

This species is much more attenuated in front than *Dolabrifera marmorea*, Pease, from the Sandwich Islands, which otherwise it much resembles in form and texture, whilst it is in sculpture much more delicate. *Dolabrifera maillardi*, Deshayes, from the island of Bourbon (see Moll. de Bourbon, p. 53, vol. vii. figs. 20–22), is much more regular in shape, more like the seed of our common plane (*Acer pseudo-platanus*), with a regular-shaped wing and a head or nucleus continuous with the body instead of, as here, a fleam-like blade and distinct handle.

Family PLEUROBRANCHIDÆ, Gray, 1840.

Genus *Umbrella*, Lamarck, 1812.

Umbrella mediterranea, Lamarck.

Umbrella mediterranea, Lamarck, Anim. s. vert., vol. vi. p. 343, and (ed. Desh.) vol. vii. p. 574, sp. 2.
" " Deshayes, Encycl. méthod., vers, vol. iii. p. 663, sp. 2.
" " Philippi, Enumeratio Moll. Sicil., vol. i. p. 113, vol. ii. p. 88, pl. vii. fig. 11.
" " Cantraine, Malacol. Med., p. 92.
" " Adams, Genera, vol. ii. p. 91, pl. lxi. fig. 3.
" " Weinkauff, Conch. d. Mittelm., vol. ii. p. 179.
" " Monterosato, Enumerazione, p. 53.

July 28–31, 1873. St Vincent, Cape Verde Islands. Harbour. 7 to 25 fathoms.

Habitat.—Mediterranean (Lamarck); Madeira (Watson).

The embryonic apex of this shell is glossy, of a rich chestnut brown. It is placed a little to the left side of the shell, and is directed backwards. Including the whole shell, there are barely two whorls, and these are sinistral.

Family SIPHONARIIDÆ, Gray, 1840.

Genus *Siphonaria*, Sowerby, 1824.

Species.

1. *Siphonaria cancer*, Reeve.
2. *Siphonaria (Liriola) tristensis*, Sow.

1. *Siphonaria cancer*, Reeve.

Siphonaria cancer, Reeve, Conch. Icon., vol. ix. pl. ii. fig. 7.
" " Hutton, Cat. Mar. Moll. New Zealand, p. 55, No. 261*.
" " v. Martens, Crit. List., p. 40.
" " Hutton, Manual, p. 36.

June 26, 1874. D'Urville Island, New Zealand. Beach.

Habitat.—New Zealand (British Museum).

On the back of the British Museum tablet this species is said to = *Siphonaria zelandica*, Quoy and Gaimard, and = *Siphonaria australis*, Quoy and Gaimard. Deshayes (Lamarck, Anim. s. vert., 2d ed., vol. vii. p. 558, No. 7) says of the former of these two that it has some resemblance to *Siphonaria diemenensis*, Quoy and Gaimard.

2. *Siphonaria* (*Liriola*) *tristensis*, Leach.

Siphonaria tristensis, Leach MS. in Sowerby's Genera, vol. i. pl. cxliii. fig. 3.
„ *lessoni*, De Blainville, Malacologie, pl. xliv. fig. 2.
„ „ De Blainville, Dict. d. Sci. Nat., vol. xlix. p. 296.
„ „ Lamarck, Anim. s. vert. (ed. Desh.), vol. vii. p. 562, sp. 19.
„ *lateralis*, Couthouy, Proc. Boston Nat. Hist. Soc., 1846, vol. ii. p. 153.
„ *lessoni*, d'Orbigny, Amérique mérid., Moll., vol. v. p. 469, No. 422, pl. lvi. figs. 7–11.
„ *tristensis* and *Siphonaria redimitulum*, Reeve, Conch. Icon., vol. ix. pl. v. figs. 23, 24.
„ „ Dall, Amer. Journ. Conch., 1870, vol. vi.
„ „ Dall, Kerguelen, Bull. U.S. Nat. Museum, 1876, No. 3, pt. 2, p. 45.

October 15, 1873. Tristan da Cunha. Shore.

October 16, 1873. Inaccessible Island, Tristan da Cunha. Shore.

Habitat.—Tristan da Cunha (Reeve); Falkland Islands, Chili, and Peru (d'Orbigny). Orange Harbour, Patagonia, Kerguelen (Dall).

Sowerby ascribes this species to Leach; further than this I have failed to trace it. Gray (Brit. Mus. Cat. of d'Orbigny, Shells of South America, p. 50, No. 422) says the species is the same as *Siphonaria læviuscula*, Sow. (see Proc. Zool. Soc. Lond., 1835, p. 7). I suppose that the *Siphonaria læviuscula*, de Blainv. MS. (see Reeve, Conch. Icon., vol. ix. pl. i. fig. 5), is a mistaken reference of Reeve's for the same.

APPENDIX A.

No. I. (See p. 49.)

2. *Haliotis varia*, Linne.

Haliotis varia, Linne, Syst. Nat. (ed. 12) p. 1256, No. 742.
Martini, Conch. Cab., vol. i. p. 179, pl. xv. fig. 144.
" " Dillwyn, Catalogue, vol. ii. p. 1010, sp. 7.
" " Wood, Ind. Test., p. 182, pl. xxxvi. fig. 7.
" " Lamarck, Anim. s. vert. (ed. Desh.), vol. ix. p. 31, sp. 17.
" " Reeve, Conch. Icon., vol. iii. pl. ii. fig. 4.
" " Hanley, Ipsa Linn. Conch., pp. 411, 544.
" " Weinkauff, Conch. Cab. (ed. Küster), p. 10, sp. 6, pl. iii. fig. 4.
" " v. Martens, Moll. Mauritius, &c., p. 298.

February 1, 1875. Samboangan, Philippines. 10 fathoms.

Habitat.—From the east coast of Africa to Australia (v. Martens).

No. Ia. (See p. 121.)

2, *Homalogyra densicostata* (?), Jeffreys.

Homalogyra densicostata, Gwyn Jeffreys, Moll. "Lightning" and "Porcupine" Exped., Proc. Zool. Soc. Lond., 1884, p. 129, pl. x. fig. 1.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Habitat.—North Atlantic, "Bulldog" Exped., lat. 55° 36′ N., long. 54° 33′ W., 1622 fathoms (Jeffreys, Brit. Conch., vol. iv. p. 72); "Porcupine" Exped., 1870, Stations 16 and 17A, lat. 39° N., long. 9° W., 795 to 994 fathoms.

I have not seen Dr Gwyn Jeffreys' specimens of this species, but I think the Challenger shells correspond fairly with the description and figure; the sharp keel which he describes as encircling the upper part of the periphery, and also the base, is very feeble in his figure, and is still more so compared to the strong expressed angulation in the Challenger shells, but his figure suggests that this may be the effect of a fuller development of the whole shell. Such a change is a very frequent result of larger growth consequent on age, and possibly Dr Gwyn Jeffreys' specimens are better grown than mine, which are of decidedly smaller measurement than his.

No. II. (See p. 124.)

5. *Turbo (Lunella) coronatus*, Gmelin, var. *granulatus*, Gmelin.

Turbo coronatus, Gmelin, Syst. Nat., p. 3594, No. 21, and (*Turbo granulatus*) p. 3601, No. 51.
Corona reclusa, Chemnitz, Conch. Cab., vol. v. p. 201, pl. clxxx. figs. 1791–1793, and (*Cochlea lunaris perforata*) p. 164, pl. clxxvi. figs. 1744–1746.
Turbo coronatus, Bory, Encycl. méthod., vers, pl. ccccxlviii. fig. 2.
„ „ Dillwyn, Catalogue, vol. ii. p. 833, sp. 40, and (*Turbo granulatus*) p. 849, sp. 79.
„ „ Wood, Ind. Test., p. 151, pl. xxx. fig. 40, and (*Turbo granulatus*) p. 155, pl. xxxi. fig. 80.
„ „ Lamarck, Anim. s. vert., vol. vii. p. 46, sp. 20, and (ed. Desh.) vol. ix. p. 197, sp. 20.
„ „ Reeve, Conch. Icon., vol. iv. pl. v. fig. 22, and (*Turbo lugubris*, not of King nor of Kiener), pl. xii. fig. 63.
„ „ Philippi, Conch. Cab. (ed. Küster), p. 23, sp. 16, pl. vi. figs. 11–13, and (*Turbo granulatus*) p. 37, sp. 31, pl. ix. figs. 7–9, and (*Turbo lugubris*) p. 85, sp. 84, pl. xix. fig. 9.
„ „ Krauss, Südafrik. Moll., p. 101, sp. 2.
„ *granulatus*, Lischke, Japan. Meer. Conch., vol. i. p. 87.
„ *coronatus*, Fischer in Kiener's Iconog., p. 76, sp. 50, pl. xii. fig. 2, pl. xxxiv. fig. 3, pl. xl. fig. 4, and (*Turbo granulatus*) p. 78, sp. 51, pl. xxviii. fig. 2, pl. xl. fig. 3.
„ „ v. Martens, Moll. Mauritius, &c., p. 294.
Lunella granulata, Dunker, Index Moll. Japon., p. 128.
Turbo (Marmorostoma) coronatus, E. A. Smith, "Alert" Collections, p. 504.
„ (*Lunella*) *coronatus*, Sowerby, Thes. Conch., pt. 43, p. 205, sp. 48, pl. ccccxcviii. (vi. *Gen.*) figs. 51–54.

August 1874. Kandavu, Fiji. Inhabited by a land-crab.

Habitat.—From Natal in East Africa (Krauss), Zanzibar (E. A. Smith), Madagascar (v. Martens), Moluccas (Chemnitz), to Japan (Lischke).

No. III. (See p. 132.)

1. *Nerita albicilla*, Linne.

Nerita albicilla, Linne, Syst. Nat. (ed. 12), p. 1254, No. 733.
Chemnitz, Conch. Cab., vol. v. p. 313, pl. cxciii. fig. 2000.
„ „ Dillwyn, Catalogue, vol. ii. p. 998, sp. 45.
„ „ Wood, Ind. Test., p. 180, pl. xxxvi. fig. 47.
„ „ Lamarck, Anim. s. vert., vol. vi. (2) p. 192, and (ed. Desh.) vol. viii. p. 605, sp. 8.
„ „ Deshayes, Encycl. méthod., vers, vol. iii. p. 621, sp. 12.
„ „ Quoy and Gaimard, "Astrolabe," Zool., vol. iii. pl. lxv. figs. 17, 18.
„ „ Krauss, Südafrik. Moll., p. 89, sp. 3.
„ „ Reeve, Conch. Icon., vol. ix. pl. xv. fig. 64.
„ „ Hanley, Ipsa Linn. Conch., pp. 405, 543.
„ „ Deshayes, Moll. Réunion, p. 79, No. 236.
„ „ Issel, Malac. Mar Rosso, p. 214, No. 511.
„ „ v. Martens, Moll. Mauritius, &c., p. 291.
„ „ E. A. Smith, "Alert" Collections, p. 503, No. 84.

August 1874. Kandavu, Fiji. Inhabited by a land-crab.

Habitat.—From the Natal coast (Krauss) and the Red Sea (Issel), across the whole Indian Ocean to Polynesia and Australia (v. Martens).

Sowerby (Thes. Conch., pt. 40, p. 112, sp. 41, pl. ccccl xiv. figs. 26–28, pl. ccccl xviii. fig. 113) is not quoted above, as his fig. 27 does not represent this species. The others perhaps do, but it is impossible to be sure.

No. IV. (See p. 132.)

3. *Nerita chamæleon*, Linne.

Nerita chamæleon, Linne, Syst. Nat. (ed. 12), p. 1255, No. 737.
Chemnitz, Conch. Cab., vol. v. p. 310, pl. cxcii. figs. 1988, 1989 (1990, 1991, excl.).
„ „ Dillwyn, Catalogue, vol. ii. p. 1003, sp. 57.
„ „ Wood, Ind. Test., p. 181, pl. xxxvi. fig. 60, and (*Nerita stella*) fig. 61.
„ „ Lamarck, Anim. s. vert., vol. vi. (2) p. 192, sp. 9.
„ „ Deshayes, Encycl. méthod., vers, vol. iii. p. 618, sp. 4, pl. cccclv. fig. 3 (as *Nerita bizonalis*).
„ „ Hanley, Ipsa Linn. Conch., pp. 407, 543.
„ *stella*, Reeve, Conch. Icon., vol. ix. pl. xv. fig. 64.
„ *chamæleo*, v. Martens, Moll. Mauritius, &c., p. 291.
„ *chamæleon*, Sowerby, Thes. Conch., pt. 40, p. 111, sp. 38, pl. ccccl xiv. (ii. *Gen.*) fig. 22, pl. ccccl xvii. (v. *Gen.*) figs. 94–99.

February 1, 1875. Samboangan, Philippines. 10 fathoms.

Habitat.—Madagascar and the Indian Ocean, to the Malay Archipelago (v. Martens).

No. V. (See p. 172.)

3. *Purpura* (*Thalessa*) *pica*, de Blainville.

Martini, Conch. Cab., vol. iii. p. 269, pl. c. figs. 956–958.
Purpura pica, de Blainville, Pourpre, Nouv. Ann. du Mus., vol. i. p. 213, sp. 27, pl. ix. fig. 9.
„ *armigera*, var., Quoy and Gaimard, "Astrolabe," Zool., vol. iii. p. 556, pl. xxxvii. figs. 17, 18.
„ *pica*, Kiener, Iconog., p. 48, sp. 29, pl. xi. fig. 31.
„ „ Lamarck, Anim. s. vert. (ed. Desh.), vol. x. p. 110, sp. 77.
„ „ Küster, Conch. Cab. (ed. Küster), p. 190, sp. 98, pl. xxxi. figs. 9, 10.
„ „ v. Martens, Moll. Mauritius, &c., p. 236.

August 1874. Kandavu, Fiji.

Habitat.—Manilla (Küster); from the Malayan Archipelago, across the whole Indian Ocean, to the east coast of Africa (v. Martens).

The solitary specimen of this species was picked up some way inland occupied by a hermit crab (*Cœnobita rugosa*, M.-Edw.).

No. VI. (See p. 465.)

CÆCIDÆ, Gray, 1847.

Genera. 1. *Parastrophia*, de Folin. 2. *Strebloceras*, Carp. 3. *Watsonia*, de Folin. 4. *Cæcum*, Flem.

The Cæcidæ are a group of shallow-water Mollusca, enormously numerous in individuals but hitherto poor in species. As was natural, very few indeed presented themselves in the Challenger dredgings; and these I had great pleasure in intrusting to one who has so specially made the group his study as the Marquis de Folin. His acquaintance with the subject in general, and his own vast collection of specimens gathered from every quarter of the globe, are the pledges that in what he has now produced nothing known on the subject has been overlooked; and even those who may hesitate to accept in full his classification will recognise both the general value of this monograph, and the extraordinary perfection with which he has delineated the specimens.

His Report upon the Challenger collection will be found upon the next few pages, but two species which came into my hands after his work was completed are recorded here, and a note upon them by the Marquis will be found on p. 689.

(15.) *Cæcum vitreum*, Carpenter.

Cæcum glabrum (not of Mont.), McAndrew, Brit. Assoc. Report, Geog. Distr. Test., 1854.
„ *vitreum*, Carpenter, Monog. Cæcidæ, Proc. Zool. Soc. Lond., 1858, p. 432, sp. 29.

February 10, 1873. Off Tenerife. 78 fathoms.

Habitat.—Tenerife. 50 fathoms (McAndrew).

For the identification of this species the Marquis de Folin is not answerable. It had slipped aside, and was not sent to him with the others. It was, however, identified by me from McAndrew's own specimens in the Cambridge Museum.

(16.) *Cæcum pollicare*, Carpenter.

Cæcum pollicare, Carpenter, Monog. Cæcidæ, Proc. Zool. Soc. Lond., 1858, p. 432, sp. 30.

February 10, 1873. Off Tenerife. 78 fathoms.

Habitat.—Tenerife. 50 fathoms (McAndrew).

For this species, in like manner, I am alone responsible. Coming on it exactly as Dr Carpenter says he did on the types of the species, and recognising the peculiar features he refers to, I have presumed to refer the solitary specimen met with to his species.

APPENDIX B.

REPORT on the CÆCIDÆ collected by H.M.S. CHALLENGER during the Years 1873–76. By LEOPOLD, MARQUIS DE FOLIN.

CÆCIDÆ, Gray, 1847.

1. *Parastrophia*, de Folin, 1875.

Parastrophia challengeri, de Folin (CÆCIDÆ, Pl. I. fig. 1).

Parastrophia challengeri, de Folin, Cæcidæ of the Challenger Expedition, Proc. Zool. Soc. Lond., 1879, p. 806.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud. Surface temperature 77°·2 F. One specimen.

Testa minuta, tubularis, tricurvata, subopaca, alba, nitida, minutissime et irregulariter transversim striata; apicem versus paululo tumidula. Apertura obliqua, haud marginata.

Length, 0·09 in. Breadth, ·008 in.

The apex of this specimen has been broken and restored; so that its original form is somewhat obliterated. The species presents the usual slight swelling at the beginning of the curve, a little way from the apex. It has three curvatures. The aperture is oblique. From *Parastrophia asturiana*, de Folin (see Les Fonds de la Mer, vol. i. pp. 174, 218, pl. xxix. fig. 7) it differs in that the shell here is shorter, the curves stronger, while the annular striations are much finer and are differently arranged. Its form distinguishes it from *Parastrophia cornucopiæ*, de Folin (Les Fonds, &c., vol. i. pp. 122, 174, 218, pl. xv. figs. 7–9). The absence of the characteristic apex is a feature noticeable here, as well as in some specimens of *Parastrophia asturiana* which yet present all the other characteristics of the genus. In a shell so sharp at the point a fractured apex is not wonderful; it doubtless occurs through accident; and the injury is repaired, and the traces of it concealed, by a deposition of shelly matter.

2. *Strebloceras*, Carpenter, 1858.

Strebloceras subannulatum, de Folin (CÆCIDÆ, Pl. I. figs. 2, 3).

Strebloceras subannulatum, de Folin, Cæcidæ of the Challenger Expedition, Proc. Zool. Soc. Lond., 1879, p. 807.

July 1875. Reefs off Honolulu. 40 fathoms. Three specimens.

Testa minuta, bicurvata, vitrea, diaphana, nitida, nucleo spirali, obliquo, anfractibus duobus; postea testa tubularis, latitudine accrescens, curvam duplicem sequens, transversim subannulata, annulis latis, minutissime expressis, subacutis, late separatis. Apertura obliqua.

Length, 0·12 in. Breadth, 0·02 in.

These three specimens are the first living representatives of the genus; and that they really belong to it is obvious, since the nucleus exhibits two or two-and-a-half whorls and is placed at the side, not in the central plane of the shell—the position occupied by the nucleus in *Cæcum* with as many whorls, and in *Parastrophia* with only half-a-whorl; and this is a distinction of great importance. Below the nucleus the shell increases steadily in breadth, and as it lengthens takes a curve in two planes. The shell is vitreous, translucent, glossy, and thin, ornamented by broad, remote, transverse, slightly sharp undulations, which can hardly be reckoned rings, being so faint as only to be visible under the microscope. This ornamentation, slight as it is, is very characteristic. The mouth is oblique, with the obliquity turned towards the plane of the apex of the nucleus. This is a feature of some importance in the family of Cæcidæ, the direction of the oblique mouth being constant in the well-known genera *Cæcum*, Flem., and *Meioceras*, Carp.; and the same may be affirmed of *Parastrophia*.

3. *Watsonia*, de Folin, 1879.

Testa probabiliter primum nucleosa, postea tubularis, decollata, vix bicurvata, conica. Apertura orbicularis, valde obliqua, valide circumdata.

The three specimens here under consideration have all the appearances of belonging to the family of the Cæcidæ. Their form is very peculiar: obviously they have lost the embryonic shell, and the opening thus made has been closed by a septum; but, unlike the case in *Cæcum*, only a single decollation has taken place here, leaving the shell acutely conical. On this feature the new genus is founded, which I have dedicated to the Rev. Robert Boog Watson.

Watsonia elegans, de Folin (CÆCIDÆ, Pl. I. figs. 4–6).

Watsonia elegans, de Folin, Cæcidæ of the Challenger Expedition, Proc. Zool. Soc. Lond., 1879, p. 808.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud. Surface temperature 77°·2 F. Three specimens.

Testa adulta, tubularis, conica, leviter biarcuata, subflava, nitida, annulis regularibus, rotundatis, valde obliquis, minimis, paulo expressis, crebris, elegantissime cincta. Apertura valde obliqua, annulo lato crasso valde prominente circumdata.

Length, 0·1 in. Breadth, 0·02 in.

This very remarkable and elegant form is extremely conical. It starts with a rather regular curve, and towards the mouth bends suddenly in the same direction as the very oblique aperture. It is yellowish glossy and very beautifully ornamented with numerous small, transverse, oblique rings slightly expressed, but well rounded, and though close-set yet well defined. The very oblique mouth is strengthened by a large and very prominent ring, which indicates the adult condition of the shell. This fact of the shells being full-grown implies that no further decollation was to take place, while the fineness of the pointed apex indicates that only one has occurred already. The septum of the apex is smooth, with a minute, scarce visible mamillation in one specimen, which is even less marked on the second. The third is broken.

All appearances point to the Cæcidæ as the true position of this beautiful and interesting little shell; but even should this prove a mistake, it will still constitute in any case a remarkable genus.

4. *Cæcum*, Fleming, 1842.

1. *Cæcum lineicinctum*, de Folin.
2. *Cæcum attenuatum*, de Folin.
3. *Cæcum sepimentum*, de Folin.
4. *Cæcum*, n. sp.
5. *Cæcum chinense*, de Folin.
6. *Cæcum subflavum*, de Folin.
7. *Cæcum succineum*, de Folin.
8. *Cæcum microcyclus*, de Folin.
9. *Cæcum elegantissimum*, Carp.
10. *Cæcum regulare*, Carp.
11. *Cæcum exile*, de Folin.
12. *Cæcum crystallinum*, de Folin.
13. *Cæcum angustum*, de Folin.
14. *Cæcum eburneum*, de Folin.
(15.) *Cæcum vitreum*, Carp. (see pp. 680, 689).
(16.) *Cæcum pollicare*, Carp. (see pp. 680, 689).

1. *Cæcum lineicinctum*, de Folin (CÆCIDÆ, Pl. II. figs. 7, 8).

Cæcum lineicinctum, de Folin, Cæcidæ of the Challenger Expedition, Proc. Zool. Soc. Lond., 1879, p. 808.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. Off Culebra Island, West Indies. 390 fathoms. Pteropod ooze. One specimen.

Testa subcylindrica, parum arcuata, albida, subopaca, sublævis, nitida, aperturam versus lineis transversis cincta. Apertura? Septo mucronato, leviter circumdato.

Length, 0·1 in. Breadth, 0·028 in.

The solitary specimen of this species is in bad condition; but the shell is obviously glossy, nearly opaque, whitish and almost smooth, with a few strong transverse lines like minute rings towards the mouth, which is broken. The mucronated septum has possibly been much larger; for it seems eroded. Like all dactyliform septa it is surrounded by a portion of the tube, which projects so as to protect it. It is the first smooth or nearly smooth *Cæcum* I have seen with a septum of this character; and, misled by this feature, I at first considered it to be a specimen of *Cæcum reversum*, Carp.; but that species belongs to his group *Fartulum*, with which the specimen in hand has nothing to do. I believe it to be a new species.

2. *Cæcum attenuatum*, de Folin (Cæcidæ, Pl. II. figs. 9–11).

Cæcum attenuatum, de Folin, Cæcidæ of the Challenger Expedition, Proc. Zool. Soc. Lond., 1879, p. 809.

September 8, 1874. Flinders Passage, Cape York. 7 fathoms. Nine specimens.

Testa, quoad genus, mediocris, conica, arcuata, elongata, alba, parum nitida, subopaca, annulis numerosis crebris haud seu vix expressis cincta, aperturam versus paululo latior vel dilatata. Apertura vix obliqua, haud marginata, parum contracta. Septo valido mamillato-ungulato, margine laterali bicurvato, dorsali gibboso.

Length, 0·07 in. Breadth, 0·016 in.

A very curious species, very small, conical, curved, long in proportion to its breadth, slightly glossy, opaque. It looks smooth; but under a lens it appears ornamented with numerous close-set, scarcely projecting rings. Towards the mouth the shell broadens a little and then contracts, thus forming a peristome which is slightly oblique and has no ledge. The septum is enormous, and in form is at once mamillated and ungulated. Its dorsal protuberance or hump, when looked at from behind, rises in an equable curve from either side.

3. *Cæcum sepimentum*, de Folin.

Cæcum sepimentum, de Folin, Les Fonds de la Mer, vol. i. p. 84, pl. vi. fig. 7.

July 1875. Reefs off Honolulu. 40 fathoms. Many specimens.

Var. *arcuata*, De Folin.

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ W. Tongatabu. 18 fathoms. Coral mud. Surface temperature 75° F. One specimen.

September 28, 1875. Tahiti Harbour. 20 fathoms. Two specimens.

This is a species originally described from specimens dredged at Mauritius. The numerous specimens from Honolulu are quite of the typical form. The var. *arcuata* is shorter and more bent. The specimen from Tongatabu is somewhat broader and has thicker rings than those from Tahiti.

4. *Cæcum*, n. sp. (Cæcidæ, Pl. II. fig. 12).

July 1875. Reefs off Honolulu. 40 fathoms. One broken specimen.

Probably a third of the shell is broken away. It is ornamented with strong and pretty regular rounded transverse rings, which are parted by hollows as broad and as rounded as the rings. The septum is regularly and hemispherically mamillated with a coarsely tubercled surface. It seems to be a new species.

5. *Cœcum chinense*, de Folin.

Cœcum chinense, de Folin, Les Fonds de la Mer, vol. i. p. 80, pl. ix. figs. 3, 4.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud. Surface temperature 77°·2 F. Two specimens.

Compared with the original types, the Challenger specimens have the transverse striations stronger, more regular, and more prominent, but they certainly belong to this species.

6. *Cœcum subflavum*, de Folin (CÆCIDÆ, Pl. II. figs. 13, 14).

Cœcum subflavum, de Folin, Cæcidæ of the Challenger Expedition, Proc. Zool. Soc. Lond., 1879, p. 810.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud. Surface temperature 77°·2 F. Two specimens.

Testa minuta, subcylindrica, paulo arcuata, primum albida, dein subflava, nitida, strigis irregularibus plus minusve expressis transversim cincta, aperturam versus tumida; inflatio rotundata, transversim sulcata. Apertura leviter obliqua, tumore circumdata. Septo haud elevato, bimamillato, seu mamillato-ungulato; margine laterali undulato, paululo convexo, fere plano decollationis parallelo.

Length of entire shell, 0·1 in.; length of the adult part, 0·07. Breadth, 0·016.

In this specimen the adolescent shell is still united to the full-grown adult, whose septum can be recognised within, through the thin walls of the earlier shell. A slight contraction of the tube indicates the place where decollation was about to take place. Such specimens are occasionally to be met with, and are very interesting.

The species belongs to the pretty numerous group of smooth Cæcums, all more or less nearly connected. Among these may be mentioned in particular *Cœcum auriculatum*, de Folin, *Cœcum bimamillatum*, de Folin, *Cœcum circumvolutum*, de Folin, *Cœcum massiliense*, de Folin, *Cœcum modestum*, de Folin, *Cœcum strigosum*, de Folin (see Les Fonds de la Mer); but from all of them this species differs in the mouth or in the septum.

In colour it is whitish near the apex and slightly yellowish towards the mouth. It is strongly but irregularly striated transversely. Near the mouth, which is little oblique, there is a rounded transversely furrowed varix bevelled off to a thin inner edge. The septum is bimamillated, having a slightly larger and higher swelling on the side which lies near the concave curve of the shell.

7. *Cœcum succineum*, de Folin (CÆCIDÆ, Pl. III. figs. 15, 16).

Cœcum succineum, de Folin, Cæcidæ of the Challenger Expedition, Proc. Zool. Soc. Lond., 1879, p. 810.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud. Surface temperature 77°·2 F. Two specimens.

Testa minuta, subcylindrica, parum elongata, arcuata, flava vel albida, subopaca, nitidissima, lævis sed subannulata, aperturam versus dilatata, annulo lato, rotundato, prominente terminata. Apertura paululo obliqua, haud contracta. Septo subplanato, parum expresso, vix conspicuo.

Length, 0·074 in. to 0·079 in. Breadth, 0·016 in.

This species is nearly cylindrical, a good deal curved, rather long, amber-coloured or whitish or yellowish, very glossy, nearly opaque. In some lights it looks as if girt by a series of very small rings; but there is no real swelling nor grooving, and the appearance of rings is probably only some effect of reflection in connection with the texture of the shell. There is a broad and high ring round the mouth. The septum is nearly flat, and projects so slightly as to be barely visible from the side.

This species may possibly be only a variety of *Cæcum subflavum*, de Folin; but the difference in the septum seems to individualise it.

8. *Cæcum microcyclus*, de Folin (CÆCIDÆ, Pl. III. figs. 17–19).

Cæcum microcyclus, de Folin, Cæcidæ of the Challenger Expedition, Proc. Zool. Soc. Lond., 1879, p. 811.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York. 8 fathoms. Coral mud. Surface temperature 77°·2 F. Two specimens.

Testa subconica, elongata, arcuata, flavescens, nitidissima, subopaca, annulis multis parum expressis cincta, aperturam versus paulo dilatata. Apertura haud obliqua, nec contracta, haud marginata. Septo subungulato, submucronato, aliquando bimucronato.

Length, 0·079 in. Breadth, 0·012 in.

This beautiful species is long in proportion to its breadth; it is conical, rather bent, yellowish, very glossy and nearly opaque. The sculpture consists of numerous small rings, very close-set and slightly prominent. It is sometimes as smooth as *Cæcum succineum*, de Folin, from which it differs in its greater length, its more conical form, and the shape of its septum. The mouth is normal in its relation to the axis; it has no marginal ring; and the shell expands towards it regularly without any contraction. The septum is somewhat pointedly subungulated, presenting occasionally two or three very similar protuberances.

9. *Cæcum elegantissimum*, Carpenter.

Cæcum elegantissimum, Carpenter, Cæcidæ Monog., Proc. Zool. Soc. Lond., 1858, p. 429, sp. 24.

February 10, 1873. Off Tenerife. 78 fathoms. Six specimens.

These specimens present slight differences, but belong unquestionably to this somewhat variable species.

10. *Cæcum regulare*, Carpenter.

Cæcum regulare, Carpenter, Cæcidæ Monog., Proc. Zool. Soc. Lond., 1858, p. 428, sp. 22.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud. One specimen.

This specimen differs a little from Carpenter's description of *Cæcum regulare*, but not enough to justify its erection into a separate species.

11. *Cæcum exile*, de Folin (CÆCIDÆ, Pl. III. figs. 20–22).

Cæcum exile, de Folin, Cæcidæ of the Challenger Expedition, Proc. Zool. Soc. Lond., 1879, p. 811.

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ W. Tongatabu. 18 fathoms. Coral mud. One specimen.

Testa minima, paululo subconica, arcuata, vitrea, diaphana, tenuis, nitida, primum annulata, dein transversim striata, annulis minimis vix expressis, aperturam versus paululo inflata. Apertura parum contracta, vix obliqua, marginata. Septo vix elevato, submamillato, apice in medio sito.

Length, 0·059 in. Breadth, 0·012 in.

This pretty little species is somewhat broken at the mouth, but is otherwise perfect. It is slightly conical, crystalline, translucent, glossy and very thin. On the upper part there are rings, which though scarcely expressed are quite distinct under a magnifying glass. At about one-third from the apex they are replaced by irregularly disposed striations. Towards the mouth the shell is slightly dilated; but just at the edge it is faintly constricted and then even more faintly reflected. The septum is minute and very slightly elevated in the form of a centrally mamillated button.

The species differs from *Cæcum bipartitum*, de Folin (Les Fonds de la Mer, vol. i. p. 185, pl. xxv. figs. 9, 10) from Mexico, in size, thinness of shell, form of mouth and septum, and in sculpture. From *Cæcum semicinctum*, de Folin (Les Melèagrinicoles, p. 42; Les Fonds de la Mer, p. 8) it differs in size, thinness, arrangement and form of the rings, and in the form of its septum.

12. *Cæcum crystallinum*, de Folin (CÆCIDÆ, Pl. III. figs. 23, 24).

Cæcum crystallinum, de Folin, Cæcidæ of the Challenger Expedition, Proc. Zool. Soc. Lond., 1879, p. 812.

July 1875. Reefs off Honolulu. 40 fathoms. One specimen.

Length? Breadth, 0·012 in.

An imperfect specimen, the upper part being broken off. It is evidently a new species, though nearly related to *Cæcum striatum*, de Folin (Fonds de la Mer, vol. i. pp. 49, 170, pl. v. fig. 3), from which it differs in that the shell expands towards the mouth and is thereafter contracted so as to form a minute gorge, with a slightly reflected lip. At first sight it resembles *Cæcum glabriforme*, Carp. (*Brochina*);

but it is straighter, and the texture of the shell is different, exhibiting under the microscope fine longitudinal striations. Though unable, from its imperfect condition, to offer a full description, the specimen is so clearly a new species that I venture to attach to it the name I have given above.

13. *Cæcum angustum*, n. sp., de Folin (Pl. L. fig. 8).

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York, North Australia. 8 fathoms. Coral mud. Surface temperature 77°·2 F.

Testa minuta, subcylindrica, satis elongata, angusta, subflava, paulo nitida; primum sublævis, super ultimam partem annulata, annulis haud prominentibus, sulcis vix profundis angustis separatis. Apertura valde declivi, restricta, labro acuto. Septo mamillato rugoso, ad dorsum inflato.

Length, 0·067 in. Breadth, 0·012 in.

At first sight the solitary specimen of this species seemed to be half-grown, but fuller examination proved it to be adult. This is indicated by the very oblique mouth, which forms an angle of 30° with the tangent to the dorsal slope; still more distinctly is this implied by the contraction of the mouth; and, finally, for two-thirds of the length, the form of the shell is very cylindrical, indicating that there has been no increase of breadth except on the first third, and even there it is scarcely appreciable; all this points to a shell which has reached its full development. The general form is narrow and rather long; its colour is yellow; it is smooth on the first two-thirds; on the last third there are rings which are feeble, slightly rounded and approximate, the parting furrows being narrow and shallow. The mouth-edge is sharp. The septum is mamillate, wrinkled, and swollen toward the dorsal side.

14. *Cæcum eburneum*, n. sp., de Folin (Pl. L. fig. 9).

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York, North Australia. 8 fathoms. Coral mud. Surface temperature 77°·2 F.

Testa minuta, parum arcuata, cylindrica, satis lata, haud elongata, nitida eboris conspectu, lævis, transversim irregulariter strigata, aperturam versus inflata, dein normalis et paululo restricta, subannulata. Apertura haud declivi, labro acuto. Septo mamillato, parum prominente.

Length, 0·087 in. Breadth, 0·02 in.

This species, like most of the smooth Cæcums which have a mamillate septum, is in form almost cylindrical, and is brilliant, very faintly yellow, with the aspect of ivory. It is somewhat irregularly transversely striate. Its essential distinguishing characteristic is a somewhat marked swelling rather remote from the mouth towards which it again contracts, so as to present at the end nearly the same diameter as at an earlier point. This swelling presents some three or four folds, or feeble rings, close to the mouth, which is very slightly contracted, is not oblique, and presents a very sharp edge. The septum is roundly mamillate, but very little prominent.

[For species 15 and 16 see p. 680.]

NOTE ON *CÆCUM TRACHÆA* (MONTAGUE), *CÆCUM POLLICARE*, CARPENTER, AND *CÆCUM VITREUM*, CARPENTER.[1]

From a number of Cæcums recently received from Algiers, I have been able to select a series of *Cæcum trachæa* (Mont.), upon which it was easy to make the following observations:—

(1.) The specimens from the coast of Algiers appear to be much smaller than those commonly taken on the shores of Great Britain and of the Bay of Biscay.

(2.) The characters become gradually less marked on the members of the series, and eventually specimens are found which present no other features than those observed in *Cæcum pollicare*, Carp., which they further resemble in size. The ornamentation finally vanishes, and the shell, which has thus become smooth, shows no more sculpture than does a specimen of *Cæcum vitreum* of the same author.

A large number of specimens of Cæcum, which were collected on board the "Travailleur" and the "Talisman" in the Strait of Bocayana, between Lanzerote and Fuertaventura, were recognised as belonging to the two species, *Cæcum pollicare* and *Cæcum vitreum*.

It was easy to observe on a series of specimens that the former gradually became attenuated and lost its principal character, the longitudinal ornamentation, and arrived at the smooth condition seen in *Cæcum vitreum*.

A similar phenomenon was noticed in the case of *Cæcum achironum*, from the coast of Brazil, which, while very different in form, is ornamented in the same way as *Cæcum pollicare*. It also passes gradually into the smooth state by a weakening of the longitudinal markings ordinarily so prominent in typical specimens.

Thus the characters of *Cæcum pollicare* seem to connect it closely with *Cæcum trachæa;* it has the same form, the same aperture, the same septum, and sometimes the appearance of rings upon the earlier portions of the tube. But although the large series of specimens from Algiers apparently indicates that the one species is derived from the other, yet *Cæcum trachæa* has never been found on the coasts inhabited by *Cæcum pollicare*. Furthermore, the degeneration of the surface ornamentation does not cease until *Cæcum pollicare* passes into *Cæcum vitreum*, which also exhibits the same form, the same aperture, and the same septum, and differs only in the fact that its surface has become smooth.

[1] Added by the Marquis de Folin, May 8, 1886.

GEOGRAPHICAL DISTRIBUTION.

THERE is given here a list of the Stations and other places from which the Challenger Expedition procured Scaphopods and Marine Gasteropods, so far, at least, as these have been sent to me. The names of these molluscs from each locality have been added in alphabetical order as simplest for reference, and all species first brought to light by the Expedition are here reckoned as new.

Station II. January 13, 1873. Lat. 38° 10′ N., long. 9° 14′ W. Off Setubal. 470 fathoms. Green mud.

Bittium gemmatum, n. sp., p. 547, pl. xxxix. fig. 2.
Columbella (*Anachis*) *haliæeti*, Jeffr., p. 236.
Dentalium capillosum, Jeffr. var., p. 1, pl. i. fig. 1.
„ *circumcinctum*, n. sp., p. 7, pl. i. fig. 7.
Dentalium entalis, Linne, var. *orthrum*, Wats., p. 6.
Fusus (*Neptunea*) *despectus* (Linne), p. 199.
„ (*Siphonorbis*) *amblyterus*, n. sp., p. 205, pl. xvii. fig. 8.
Trochus (*Margarita*) *rhysus*, n. sp., p. 83, pl. v. fig. 4.

February 1873. From the rocks. Santa Cruz. Tenerife.

Litorina striata, King, p. 575.
Ranella (*Lampas*) *thomæ*, d'Orb., p. 400.
Trochus (*Trochocochlea*) *colubrinus*, Gould, p. 65.

Station VIIIp. February 10, 1873. Lat. 28° 35′ N., long. 16° 5′ W. Off Tenerife. Canaries. 78 fathoms. Volcanic sand.

Aclis mizon, n. sp., p. 501, pl. xxxiv. fig. 1.
Bittium lacteum (Phil.), p. 539.
„ *reticulatum* (Da Costa), p. 540.
Cæcum elegantissimum, Carp., p. 686.
„ *pollicare*, Carp., p. 680.
„ *vitreum*, Carp., p. 680.
Columbella rustica (Linne), p. 233.
Cypræa spurca, Linne, p. 425.
„ (*Trivia*) *candidula*, Gask., p. 427.
Eulima philippii, Weink., p. 506.
Fasciolaria armata, A. Adams, p. 243, pl. xiii. fig. 1.
Marginella (*Gibberula*) *guancha*, d'Orb., p. 270.
„ „ *miliaria* (Linne), p. 271.
Natica variabilis, Recl., p. 435.
„ (*Mamma*) *porcellana*, d'Orb., p. 453.
Odostomia turrita, Hanley, p. 481.
Phasianella pulla (Linne), p. 173.
Philine aperta (Linne), p. 671.
Ranella (*Aspa*) *marginata* (Gmel.), p. 403.
Rissoa costulata, Alder, p. 586.
„ *similis*, Scacc., p. 587.
„ (*Alvania*) *canariensis*, d'Orbigny, var. Manzoni, p. 593.
„ „ *costata* (J. Adams), p. 594.
„ „ *leacocki*, Wats., p. 594.
„ (*Cingula*) *glabrata* (v. Mühl.), p. 604.
„ (*Onoba*) *striata* (J. Adams), p. 598.
„ „ *watsoni*, Schwartz, p. 599.
„ (*Setia*) *albugo*, Wats., p. 606.
„ „ *callosa*, Manz., p. 606.
Triforis perversa (Linne), p. 560.
Trochus (*Ziziphinus*) *striatus*, Linne, p. 56.
Turritella bicingulata, Lam., p. 467.
Utriculus mamillatus (Phil.), p. 647.
„ *tornatus*, n. sp., p. 651, pl. xlviii. fig. 10.

February 10, 1873. Gomera, Canaries. 75 fathoms.

Nassa (*Cæsia*) *limata*, Chem., p. 183.
Scalaria (*Acirsa*) *subdecussata*, Cantr., p. 144.
Turritella bicingulata, Lam., p. 467.

Station VIII. February 12, 1873. Lat. 28° 3′ 15″ N., long. 17° 27′ W. Gomera, Canaries. 620 fathoms. Volcanic mud.

Dentalium entalis, Linne, var. *agilis*, Sars, p. 6.
Marginella (*Glabella*) *musica*, Hinds, p. 265.
Nassa (*Tritia*) *brychia*, n. sp., p. 198, pl. xi. fig. 5.

Station 23. March 15, 1873. Lat. 18° 24′ N., long. 63° 28′ W. Off Sombrero Island, West Indies. 450 fathoms. Pteropod ooze.

Actæon pusillus (?) (Forb.), p. 627.
Columbella (*Pyrene*) *strix*, n. sp., var. *subacta*, p. 237, pl. xiii. fig. 2 d.
Clathurella circumvoluta, n. sp., p. 357, pl. xxi. fig. 1.
„ *hormophora*, n. sp., p. 351, pl. xxi. fig. 9.
Dentalium circumcinctum, n. sp., p. 7, pl. i. fig. 7.
„ *ensiculus*, Jeffr., p. 12, pl. ii. fig. 2.
Natica leptalea, n. sp., p. 441, pl. xxvii. fig. 7.
Natica α, sp. (See Station 24.)
Pleurotoma (*Bela*) *dyscrita*, n. sp., p. 314, pl. xxiii. fig. 8.
„ (*Genota*) *didyma*, n. sp., p. 299, pl. xxii. fig. 5.
„ (*Surcula*) *syngenes*, n. sp., p. 293, pl. xx. fig. 2.
„ (*Typlomangelia*) *lithocolleta*, n. sp., p. 320, pl. xxiv. fig. 6.
Trochus (*Margarita*) *rhysus*, n. sp., p. 83, pl. v. fig. 4.

Station 24. March 25, 1873. Lat. 18° 38′ 30″ N., long. 65° 5′ 30″ W. North of Culebra Island, West Indies. 390 fathoms. Pteropod ooze.

Actæon turritus, n. sp., p. 628, pl. xlvii. fig. 2.
Basilissa alta, n. gen. and sp., p. 100, pl. vii. fig. 8.
„ *costulata*, n. gen. and sp., p. 103, pl. vii. fig. 11.
Bittium, var. sp., fragments.
Borsonia ceroplasta, n. sp., p. 368, pl. xviii. fig. 2.
Cadulus ampullaceus, n. sp., p. 23, pl. iii. fig. 11.
„ *curtus*, n. sp., p. 21, pl. iii. fig. 7.
„ „ var. *congruens*, p. 21, pl. iii. fig. 7 a.
„ *exiguus*, n. sp., p. 23, pl. iii. fig. 10.
„ *obesus*, n. sp., p. 22, pl. iii. fig. 8.
„ *rastridens*, n. sp., p. 19, pl. iii. fig. 3.
„ *sauridens*, n. sp., p. 19, pl. iii. fig. 4.
„ *vulpidens*, n. sp., p. 18, pl. iii. fig. 2.
Cæcum lineicinctum, n. sp., de Folin, p. 683, pl. (Cæcidæ) ii. figs. 7, 8.
Cassis (?) sp., fry.
„ (?) sp., fry.
Cerithiopsis pulchella, C. B. Adams, p. 526.
Clathurella araneosa, n. sp., p. 355, pl. xix. fig. 1.
Clathurella chariessa, n. sp., p. 352, pl. xx. fig. 6.
„ *formosa* (Jeffr.), p. 349.
„ *hormophora*, n. sp., p. 351, pl. xxi. fig. 9.
„ *pachia*, n. sp., p. 353, pl. xix. fig. 5.
„ *perpauxilla*, n. sp., p. 359, pl. xxii. fig. 7.
„ *pudens*, n. sp., p. 354, pl. xix. fig. 2.
„ *α*, sp.
„ *δ*, sp.
Clionella aglæophanes, n. sp., p. 374, pl. xxii. fig. 10.
„ *amblia*, n. sp., p. 373, pl. xxii. fig. 12.
„ *exsculpta*, n. sp., p. 371, pl. xxiv. fig. 2.
Columbella (*Pyrene*) *stricta*, n. sp., p. 238, pl. xiii. fig. 3.
„ „ *strix*, n. sp., var. *subacta*, p. 237, pl. xiii. fig. 2 d.
Cyclostrema excavatum, n. sp., p. 121, pl. viii. fig. 10.
„ sp.
Cylichna discus, n. sp., p. 664, pl. xlix. fig. 10.
„ *ovata*, Jeffr., p. 664, pl. xlix. fig. 9.
„ *paupercula*, n. sp., p. 669, pl. l. fig. 4.
Dentalium capillosum (?), Jeffr., p. 1, pl. i. fig. 1.
„ *compressum*, n. sp., p. 9, pl. i. fig. 9.
„ *didymum*, n. sp., p. 10, pl. i. fig. 11.
Eulima chaskanon, n. sp., p. 510, pl. xxxv. fig. 4.

Eulima chydæa, n. sp., p. 518, pl. xxxvi. fig. 8.
„ *cylindrata*, n. sp., p. 518, pl. xxxvii. fig. 1.
„ *fasciata*, n. sp., p. 509, pl. xxxv. fig. 2.
„ *gomphus*, n. sp., p. 519, pl. xxxvii. fig. 2.
„ *hians*, n. sp., p. 510, pl. xxxv. fig. 5.
„ *hyalina*, n. sp., p. 520, pl. xxxvii. fig. 3.
„ *piriformis*, Brugnone, p. 507, pl. xxxv. fig. 3.
„ *psila*, n. sp., p. 508, pl. xxxv. fig. 1.
„ *α*, sp.
„ *β*, sp.
„ *δ*, sp.
„ *μ*, sp.
„ *ν*, sp.
Fenella elongata, n. sp., p. 621, pl. xxxiv. fig. 4.
Homalogyra densicostata (?), Jeffr., p. 677.
Iphitus tuberculatus, n. sp., p. 583, pl. xlvi. fig. 5.
Lepeta cœca, Müller, p. 25.
Litiopa melanostoma, Rang., p. 572.
Marginella (*Glabella*) *elata*, n. sp., p. 269, pl. xvi. fig. 7.
„ (*Granula*) *agger*, n. sp., p. 271, pl. xvi. fig. 6.
„ *α*, sp.
„ *β*, sp.
Mathilda, sp.
Natica α, sp., same as at Station 23.
„ *β*, sp., same as at Stations 85, 120, 122.
„ *γ*, sp.
Nerita tessellata, Gmel., p. 133.
Odostomia (*Obeliscus*) *nitidula*, A. Ad., p. 487.
„ (*Turbonilla*) *densicostata* (Phil.), p. 488.
„ „ *kymatoessa*, n. sp., p. 492, pl. xxxii. fig. 6.
„ „ *paucistriata*, Jeffr., p. 489.
„ „ *phrikalea*, n. sp., p. 493, pl. xxxii. fig. 7.
„ „ *rhabdota*, n. sp., p. 491, pl. xxxii. fig. 4.
„ „ *α*, sp.
„ „ var. sp., fragments.
Oliva (*Olivella*) *vitilia*, n. sp., p. 227, pl. xiii. fig. 8.
„ sp.
Pleurotoma (*Drillia*) *incilis*, n. sp., p. 304, pl. xxiv. fig. 5.
„ (*Mangelia*) *corallina*, n. sp., p. 343, pl. xxiii. fig. 1.
Pleurotoma (*Mangelia*) *tiara*, n. sp., p. 347, pl. xxi. fig. 7.
„ (*Surcula*) *syngenes*, n. sp., p. 293, pl. xx. fig. 2.
„ (*Typhlomangelia*) *lineta*, n. sp., p. 321, pl. xxii. fig. 11.
Puncturella agger, n. sp., p. 40, pl. iv. fig. 6.
„ *clathrata*, Jeffr., p. 39.
„ *oxia*, n. sp., p. 44, pl. iv. fig. 8.
„ *sportella*, n. sp., p. 45, pl. iv. fig. 9.
„ (*Cranopsis*) *asturiana* (Fisch.), p. 45, pl. iv. fig. 4.
„ „ *granulata* (Seg.), p. 46, pl. iv. fig. 5.
„ „ *profundi*, Jeffr., p. 47.
„ (*Fissurisepta*) *rostrata*, Seg., p. 48, pl. iv. fig. 10.
Ringicula peracuta, n. sp., p. 636, pl. xlvii. fig. 11.
Rissoa microstoma, n. sp., p. 591, pl. xliv. fig. 10.
„ *pyrrhias*, n. sp., p. 588, pl. xliv. fig. 4.
„ *xanthias*, n. sp., p. 588, pl. xliv. fig. 5.
„ (*Alvania*) *didyma*, n. sp., p. 594, pl. xliv. fig. 1.
„ (*Cingula*) *alvearium*, n. sp., p. 605, pl. xlvi. fig. 1.
„ (*Onoba*) *brachia*, n. sp., p. 599, pl. xlv. fig. 8.
„ (*Setia*) *tenuisculpta*, Wats., p. 607.
„ *α*, sp.
„ *β*, sp.
„ *ζ*, sp.
„ *η*, sp.
„ *κ*, sp.
Rissoina chesnelii (Mich.), p. 615.
„ sp.
Scalaria acus, n. sp., p. 140, pl. ix. fig. 2.
„ *tortilis*, n. sp., p. 139, pl. ix. fig. 1.
„ (*Acirsa*) *pyrrhias*, n. sp., p. 145, pl. ix. fig. 7.
„ *β*, sp.
„ *γ*, sp.
Scaphander punctostriatus (Migh.), p. 642.
Schismope lacuniformis, n. sp., p. 115, pl. viii. fig. 8.
„ *tabulata*, n. sp., p. 114, pl. viii. fig. 7.
„ (?) sp.
Scissurella alta, n. sp., p. 113, pl. viii. fig. 1.
„ *crispata*, Flem., p. 112.
Seguenzia monocingulata (Seg.), p. 106.
„ *ionica*, n. sp., p. 107, pl. vii. fig. 3.
Siphodentalium platamodes, n. sp., p. 13, pl. ii. fig. 4.
„ *titthum*, n. sp., p. 14, pl. ii. fig. 5.
Solarium, sp.
Stomatella (*Gena*) *caliginosa*, H. and A. Adams, p. 111.
Triforis bigemma, n. sp., p. 562, pl. xliii. fig. 6.

Triforis inflata, n. sp., p. 564, pl. xl. fig. 1.
Trochus (*Margarita*) *æglees*, n. sp., p. 81, pl. v. fig. 10.
„ „ *cancellatus*, Jeffr., p. 92.
„ „ *clavatus*, n. sp., p. 82, pl. v. fig. 8.
„ „ *pompholygotus*, n. sp., p. 79, pl. v. fig. 9.
„ (*Margarita ?*) *scintillans*, n. sp., p. 91, pl. v. fig. 2.
„ (*Oxystele*) *euspira* (Dall), p. 68.
Trochus (*Ziziphinus*) *stirophorus*, n. sp., p. 59, pl. vi. fig. 2.
„ „ *tiara*, n. sp., p. 60, pl. vi. fig. 4.
„ δ, sp.
„ ε, sp.
Turbo (*Collonia*) *indutus*, n. sp., p. 128, pl. vi. fig. 1.
Utriculus spatha, n. sp., p. 649, pl. xlviii. fig. 7.
„ α, sp.
„ β, sp.
Zeidora naufraga, n. sp., p. 36, pl. iv. fig. 3.

"Shells from the North Atlantic at a depth of over 1000 fathoms in May and April 1873, but not labelled at the time."

Clathurella streptophora, n. sp., p. 355, pl. xix. fig. 8.
Mitularia uncinata (Reeve), p. 461.
Natica radiata, n. sp., p. 436, pl. xxvii. fig. 5.
Siliquaria (*Tenagodus*) *bernardii*, Mörch, p. 466.

Station 33. April 4, 1873. Lat. 32° 21′ 30″ N., long. 64° 35′ 55″ W. Bermuda. 435 fathoms. Coral mud.

Fissurella (*Lucapina*) *cayenensis*, Lam., p. 34.
Natica radiata, n. sp., p. 436, pl. xxvii. fig. 5.

Station 47. May 7, 1873. Lat. 41° 14′ N., long. 65° 45′ W. Off Halifax. 1340 fathoms. Blue mud.

Fusus (*Sipho*), n. sp. (?), p. 208.
Puncturella brychia, n. sp., p. 41, pl. iv. fig. 7.

Station 49. May 20, 1873. Lat. 43° 3′ N., long. 63° 39′ W. Off Halifax. 85 fathoms. Stones, gravel. Bottom temperature 35° Fahr.

Dentalium entalis, Linne, var. *striolatum*, Stimpson, p. 5.
Fusus, sp.
Natica affinis (Gmel.), p. 430.

Station 56. May 29, 1873. Lat. 32° 8′ 45″ N., long. 64° 59′ 35″ W. Off Bermuda. 1075 fathoms. Coral mud. Bottom temperature 38°·2 Fahr.

Cassis, sp. fry (not *saburon*, Adan.).
Dentalium circumcinctum, n. sp., p. 7, pl. i. fig. 7.
Dunkeria falcifera, n. sp., p. 500, pl. xxxiv. fig. 5.
Pleurotoma (*Mangelia*) *acanthodes*, n. sp., p. 342, pl. xxiii. fig. 3.
„ „ *tiara*, n. sp., p. 347, pl. xxi. fig. 7.
Ringicula peracuta, n. sp., p. 636, pl. xlvii. fig. 11.
Seguenzia monocingulata (Seg.), p. 106.
Trochus (*Margarita*) *infundibulum*, n. sp., p. 84, pl. v. fig. 5.
„ (*Margarita ?*) *scintillans*, n. sp., p. 91, pl. v. fig. 2.
„ (*Ziziphinus*) *tiara*, n. sp., p. 60, pl. vi. fig. 4.

June 20, 1873. Surface.

Ianthina rotundata, Leach, p. 134.
Litiopa melanostoma, Rang, p. 572.

Station 70. June 26, 1873. Lat. 38° 25′ N., long. 35° 50′ W. West of the Azores. 1675 fathoms. Globigerina ooze.

Columbella, sp.
Pleurotoma (*Mangelia*), sp.
Ianthina exigua, Lam., p. 134.

Station 73. June 30, 1873. Lat. 38° 30′ N., long. 31° 14′ W. West of the Azores. 1000 fathoms. Pteropod ooze. Bottom temperature 39°·4 Fahr.

Actæon amabilis, n. sp., p. 629, pl. xlvii. fig. 4.
Addisonia excentrica (Tib.), p. 32.
Bulla semilevis, Seg., p. 638.
Clathurella chariessa, n. sp., p. 352, pl. xx. fig. 6.
„ *chyta*, n. sp., p. 358, pl. xviii. fig. 4.
„ *formosa* (Jeffr.), p. 349.
Clionella quadruplex, n. sp., p. 370, pl. xix. fig. 7.
Columbella, sp.
Cylichna ovata, Jeffr., p. 664, pl. xlix. fig. 9.
Dentalium capillosum, Jeffr., p. 1, pl. i. fig. 1.
Ianthina exigua, Lam., p. 134.
„ *rotundata*, Leach, p. 134.
Odostomia (*Turbonilla*) *compressa*, Jeffr., p. 488.
Pleurotoma (*Mangelia*) *macra*, n. sp., p. 345, pl. xxiii. fig. 6.
„ sp.
Rotella (?) sp.
Scalaria acus, n. sp., p. 140, pl. ix. fig. 2.
Scaphander punctostriatus (Migh.), p. 642.
„ *gracilis*, n. sp., p. 645, pl. xlviii. fig. 4.
Seguenzia carinata, Jeffr., p. 108, pl. vii. fig. 2.
„ *ionica*, n. sp., p. 107, pl. vii. fig. 3.
Trochus (*Margarita*) *rhina*, n. sp., p. 80, pl. v. fig. 1.
Utriculus leucus, n. sp., p. 649, pl. xlviii. fig. 8.
„ *oliviformis*, n. sp., p. 648, pl. xlviii. fig. 6.

Station 75. July 2, 1873. Lat. 38° 38′ N., long. 28° 28′ 30″ W. Off Fayal, Azores. 450 and 500 fathoms. Volcanic mud.

Acmæa virginea, Müller, p. 30.
Actæon exilis, Jeffr., p. 625.
Bulla pinguicula, Jeffr., p. 638.
Bittium abruptum, n. sp., p. 551, pl. xli. fig. 4.
„ *amblyterum*, n. sp., p. 542, pl. xxxix. fig. 6.
„ *reticulatum* (Da Costa), p. 540.
„ sp.
Cadulus gracilis, Jeffr., p. 20, pl. iii. fig. 5.
Cerithiopsis fayalensis, n. sp., p. 527, pl. xxx. fig. 2.
Cithna tenella (?) (Jeffr.), p. 579.
Clathurella crispata, Crist. and Jan, p. 349.
„ *leufroyi* (Mich.), p. 350.
„ *reticulata* (Renier), p. 350.
Columbella (*Anachis*) *haliæeti*, Jeffr., p. 236.
„ (*Zafra*) *greci*, Phil., p. 240.
Cylichna alba (Brown), p. 661.
„ *ovata* (?), Jeffr., p. 664, pl. xlix. fig. 9.
Dentalium entalis, Linne, var. *orthrum*, p. 6.
Eulima famelica, n. sp., p. 515, pl. xxxvi. fig. 4.
„ sp., fragments.
„ sp., fragments.
Ianthina exigua, Lam., p. 134.
Marginella (*Gibberula*) *miliaria* (Linne), p. 271.
Murex (*Ocinebra*) *aciculatus*, Lam., p. 158.
„ (*Pseudomurex*) *fusulus*, Brocchi, p. 160.
Natica variabilis, Recluz, p. 435.
Odostomia nitens, Jeffr., p. 480.
„ (*Obeliscus*) *nitidula*, A. Adams, p. 487.
„ (*Turbonilla*) *compressa*, Jeffr., p. 488.
Pleurotoma (*Drillia*) *incrassata*, Dujardin, p. 303.
„ (*Mangelia*) *acanthodes* (?), n. sp., p. 342, pl. xxiii. fig. 3.
„ „ *eritmeta*, n. sp., p. 341, pl. xxiii. fig. 5.
Rissoa fayalensis, n. sp., p. 589, pl. xliv. fig. 7.
„ (*Alvania*) *calathus* (?), Forb. and Han., p. 592.
„ „ *cancellata* (Da Costa), p. 592.
„ „ *hispidula* (Monter.), p. 593.
„ „ *tarsodes*, n. sp., p. 595, pl. xliv. fig. 2.
„ (*Setia*) *quisquiliarum*, n. sp., p. 609, pl. xlv. fig. 3.
Rotella (?) sp.
Trachysma delicatum (Phil.), p. 138.
Triforis perversa (Linne), p. 560.
Trochus (*Margarita*) *azorensis*, n. sp., p. 88, pl. v. fig. 12.
„ „ *rhina*, n. sp., p. 80, pl. v. fig. 1.
A minute shell, genus unknown.

Station 75. Same date, but depth marked on box, 50 to 90 fathoms.

Cypræa (*Trivia*) *candidula*, Gask., p. 427.
Dentalium dentalis, Linne, p. 11.
Philine quadrata (?), S. Wood, p. 672.
Rotella, sp., same as that given above from this Station in deeper water.
Scissurella alta, n. sp., p. 113, pl. viii. fig. 1.
Trochus (*Ziziphinus*) *exasperatus*, Pennt., p. 54.
„ „ *zizyphinus*, Linne, p. 57.

Station 78. July 10, 1873. Lat. 37° 26′ N., long. 25° 13′ W. Off San Miguel, Azores. 1000 fathoms. Volcanic mud.

Actæon globulinus (?) (Forbes), p. 627.
„ (*Actæonina*) *charis*, n. sp., p. 633, pl. xlvii. fig. 7.
„ sp.
Buccinum aquilarum, n. sp., p. 213, pl. xiii. fig. 4.
Bulla semilevis, Jeffr., p. 638.
Cadulus gracilis, Jeffr., p. 20, pl. iii. fig. 5.
„ *tumidosus*, Jeffr., p. 22, pl. iii. fig. 9.
Cæcum, sp.
Cassis (?), fry.
Cithna tenella (Jeffr.), p. 579.
Clathurella chariessa, n. sp., p. 352, pl. xx. fig. 6.
„ *formosa* (Jeffr.), p. 349.
„ α, sp.
„ β, sp.
Cylichna ovata (?), Jeffr., p. 664, pl. xlix. fig. 9.
Dentalium capillosum, Jeffr., p. 1, pl. i. fig. 1.
„ *subterfissum*, Jeffr., p. 10, pl. i. fig. 10.
Fenella elongata, n. sp., p. 621, pl. xxxiv. fig. 4.
Ianthina exigua, Lam., p. 134.
Lepeta (*Pilidium*) *fulva*, Müller, p. 26.
Philine quadrata, S. Wood, p. 672.
Pleurotoma (*Mangelia*) *incincta*, n. sp., p. 346, pl. xxiv. fig. 7.
„ „ *macra*, n. sp., p. 345, pl. xxiii. fig. 6.
„ (*Pleurotomella*) *pruina*, n. sp., p. 336, pl. xxiv. fig. 4.
„ „ γ, sp.
Scaphander gracilis, n. sp., p. 645, pl. xlviii. fig. 4.
„ *punctostriatus* (Migh.), p. 642.
Seguenzia carinata, Jeffr., p. 108, pl. vii. fig. 2.
Trachysma delicatum (Phil.), p. 138.
Trochus (*Margarita*) *rhina*, n. sp., p. 80, pl. v. fig. 1.

Station 85. July 19, 1873. Lat. 28° 42′ N., long. 18° 6′ W. Off Palma, Canaries. 1125 fathoms. Volcanic mud.

Actæon amabilis, n. sp., p. 629, pl. xlvii. fig. 4.
Basilissa munda, n. gen. and sp., p. 99, pl. vii. fig. 7.
Bellerophina, sp.
Cadulus gracilis, Jeffr., p. 20, pl. iii. fig. 5.
„ *tumidosus*, Jeffr., p. 22, pl. iii. fig. 9.
Cassis (?) sp., fry.
„ (?) sp., fry.
Cithna tenella (Jeffr.), p. 579.
Clathurella chariessa, n. sp., p. 352, pl. xx. fig. 6.
Clathurella formosa (Jeffr.), p. 349.
Dentalium subterfissum, Jeffr., p. 10, pl. i. fig. 10.
Natica β, sp., same as that from Stations 24, 120, and 122.
Pleurotoma (*Mangelia*), sp.
Purpura (?), sp., fry.
Rissoa amblia, n. sp., p. 590, pl. xliv. fig. 8.
„ *deliciosa*, Jeffr., p. 587.
Trochus, sp.
Seguenzia carinata, Jeffr., p. 108, pl. vii. fig. 2.
Siphodentalium pusillum, n. sp., p. 14, pl. ii. fig. 6.

July 28–31, 1873. St Vincent, Cape Verde Islands. Harbour. 7–25 fathoms.

Columbella rustica (Linne), p. 233.
Crepidula fornicata (Linne), p. 459.
Lamellaria, sp.
Litorina punctata, Gmel.[1]
Natica (*Mamma*) *porcellana*, d'Orb., p. 453.
Philine aperta (Linne), p. 671.
Pisania (*Cantharus*) *lineata* (Gmel.), p. 215.
Pyrula morio (Linne), p. 211.
Triton nodifer, Lam., p. 389.
Umbrella mediterranea, Lam., p. 674.

[1] This species, received out of due time, has been overlooked in the Report.

Station 104. August 23, 1873. Lat. 2° 25′ N., long. 20° 1′ W. South-west of Sierra Leone. 2500 fathoms. Globigerina ooze. Bottom temperature 36°·6 Fahr.

Clathurella (*Daphnella*) *monoceros*, n. sp., p. 365, pl. xx. fig. 1.

Station 106. August 25, 1873. Lat. 1° 47′ N., long. 24° 26′ W. Mid Atlantic. 1850 fathoms. Globigerina ooze. Bottom temperature 36°·6 Fahr.

Clathurella homœotata, n. sp., p. 362, pl. xxvi. fig. 12.
,, *phyxanor*, n. sp., p. 364, pl. xxvi. fig. 14.
Dentalium, sp. n., but unrecognisable.
Oocorys sulcata, Fischer, p. 412, pl. xvii. fig. 11.
Pleurotoma (*Bela*) *klimakis*, n. sp., p. 315, pl. xxvi. fig. 7.
,, (*Pleurotomella*) *brychia*, n. sp., p. 335, pl. xix. fig. 4.

September 1, 1873. St Michael's Rocks, Fernando-Noronha. Shore.

Acmæa, sp.
Litorina (*Hamus*) *nodulosa*, d'Orb., p. 577.
Nerita ascensionis, Gmel., p. 132.

Station 113A. September 2, 1873. Lat. 3° 47′ S., long. 32° 24′ 30″ W. Anchorage, Fernando-Noronha. 7 to 25 fathoms. Volcanic sand and gravel.

Cerithiopsis, sp.
Columbella mercatoria (Linne), p. 233.
,, sp.
Cylichna noronyensis, n. sp., p. 666, pl. L. fig. 1.
Cypræa spurca, Linne, p. 425.
Fossarus ambiguus (Linne), p. 581.
Marginella (*Persicula*) *sagittata*, Hinds, p. 270.
Mitularia uncinata (?) (Reeve), p. 461.
Nassa (*Hima*) *capillaris*, n. sp., p. 186, pl. xi. fig. 7.
Oliva (*Olivella*) *fulgida*, Reeve, p. 224.
Oliva (*Olivella*) *pulchella* (?), Duclos, p. 225.
Phasianella, sp.
Rissoa, sp.
Scalaria (*Cirsotrema*) *hellenica*, Forbes, p. 143.
Siphodentalium tetraschistum, n. sp., p. 15, pl. ii. fig. 8.
Solarium, sp.
Stomatella (*Gena*) *nigra*, Q. and G., p. 112.
Utriculus (*Tornatina*) *canaliculatus* (Say), p. 655.
Vanikoro (?) sp.
Xenophora corrugata (Reeve), p. 463.

Station 120. September 9, 1873. Lat. 8° 37′ S., long. 34° 28′ W. Off Pernambuco. 675 fathoms. Red mud.

Basilissa alta, var. *oxytoma*, n. gen. and sp., p. 100, pl. vii. fig. 8 a.
Bittium enode, n. sp., p. 541, pl. xxxix. fig. 3.
,, *mamillanum*, n. sp., p. 543, pl. xl. fig. 6.
Cassis, fry (not of *Cassis saburon*, Adan., same as that from Station 56).
Cithna tenella (Jeffr.), p. 579.
Clionella lophoessa, n. sp., p. 375, pl. xxii. fig. 9.
Cyclostrema conicum, n. sp., p. 122, pl. viii. fig. 9.
Cyclostrema sulcatum, n. sp., p. 121, pl. viii. fig. 11.
Dentalium subterfissum, Jeffr., p. 10, pl. i. fig. 10.
Ianthina exigua, Lam., p. 134.
Natica, sp., same as that from Stations 24, 85, and 122. There are in the British Museum some unnamed specimens of this species from St Helena.
Pleurotoma (*Surcula*) *bolbodes*, n. sp., p. 296, pl. xxii. fig. 6.
,, ,, *hemimeres*, n. sp., p. 294, pl. xxv. fig. 10.
,, β, sp.
,, γ, sp.

Scalaria, sp.
Seguenzia carinata, Jeffr., p. 108, pl. vii. fig. 2.
„ *monocingulata* (?) (Seg.), var *lineata*, p. 106, pl. vii. fig. 1.
Seguenzia trispinosa, n. sp., p. 108, pl. vii. fig. 4.
Trochus (*Margarita*) *clavata* (?), n. sp., p. 82, pl. v. fig. 8.
„ β, sp.
„ γ, sp.

Station 122. September 10, 1873. Lat. 9° 5′ S., long. 34° 50′ W. Off Pernambuco. 350 fathoms. Red mud.

Amphisphyra seguenzæ, Wats., p. 646, pl. xlviii. fig. 5.
Aclis hyalina, n. sp., p. 502, pl. xxxiv. fig. 2.
Aclis sarissa, n. sp., p. 503, pl. xxxiv. fig. 3.
Adeorbis (?) α, sp.
„ (?) β, sp.
Bifrontia (?) *pernambucensis*, n. sp., p. 137, pl. viii. fig. 13.
Bittium, sp.
Borsonia silicea, n. sp., p. 369, pl. xxi. fig. 8.
Cæcum regulare, Carp., p. 687.
Cancellaria, sp.
Cassidaria (*Sconsia*) *striata*, Lam., p. 410.
Cithna tenella (Jeffr.), p. 579.
Clathurella chariessa, n. sp., p. 352, pl. xx. fig. 6.
„ *crispata*, Jan, p. 349.
„ *hormophora*, n. sp., p. 351, pl. xxi. fig. 9.
„ *perparva*, n. sp., p. 360, pl. xxii. fig. 8.
„ *porcellana*, n. sp., p. 363, pl. xxvi. fig. 13.
„ δ, sp.
„ η, sp.
Clionella lophoessa, n. sp. var., p. 375, pl. xxii. fig. 9.
„ *tholoïdes*, n. sp., p. 372, pl. xxiv. fig. 1.
Columbella (*Pyrene*) *strix*, n. sp., p. 237, pl. xiii. fig. 2 b.
„ sp.
Conus, sp.
Cyclostrema conicum, n. sp., p. 122, pl. viii. fig. 9.
Cylichna alba (Brown), p. 661.
„ *ovata*, Jeffr., p. 664, pl. xlix. fig. 9.
Cypræa cinerea, Gmel., p. 422.
„ *spurca*, Linne, p. 425.
Dentalium circumcinctum, n. sp., p. 7, pl. i. fig. 7.
Eulima ephamilla, n. sp., p. 511, pl. xxxv. fig. 6.
„ *hebes*, n. sp., p. 521, pl. xxxvii. fig. 6.
„ *sarissa*, n. sp., p. 514, pl. xxxvi. fig. 2.
„ sp.
Eulimella rudis, n. sp., p. 496, pl. xxxiii. fig. 2.
Fissurella (*Lucapina*) *cayenensis*, Lam., p. 34.
Fossarus ambiguus (Linne), p. 581.
Fusus sarissophorus, n. sp., p. 196, pl. xiv. fig. 1.
„ sp.
Marginella, sp.
Mitularia uncinata (Reeve), p. 461.
Murex (*Chicoreus*) *calcar*, Kiener, p. 153.
Natica β, sp. See Stations 84, 85, and 120.
Oliva (*Olivella*) *amblia*, n. sp., p. 226, pl. xiii. fig. 9.
„ „ *ephamilla*, n. sp., p. 227, pl. xiii. fig. 10.
Odostomia turrita, Hanl., p. 481.
„ *unidentata* (Mont.), p. 482.
„ (*Turbonilla*), sp.
Phasianella, sp.
Phos smithi, n. sp., p. 221, pl. xvii. fig. 9.
Pleurotoma spicea, n. sp., p. 281, pl. xxii. fig. 4.
„ (*Bela*) *phæacra*, n. sp., p. 313, pl. xxi. fig. 5.
„ (*Drillia*) *horrenda*, n. sp., p. 308, pl. xxvi. fig. 4.
„ (*Mangelia*) *hypsela*, n. sp., p. 341, pl. xxi. fig. 4.
„ „ *subtilis*, n. sp., p. 339, pl. xxiii. fig. 4.
„ (*Perrona*) *marmarina*, n. sp., p. 328, pl. xxiv. fig. 8.
„ (*Rhaphitoma*) *rhysa*, n. sp., p. 310, pl. xxi. fig. 2.
„ (*Spirotropis*) *stirophora*, n. sp., p. 326, pl. xxii. fig. 3.
„ „ *tmeta*, n. sp., p. 327, pl. xix. fig. 3.
„ (*Surcula*) *plebeia*, n. sp., p. 292, pl. xxv. fig. 2.
„ sp.
Ringicula peracuta, n. sp., p. 636, pl. xlvii. fig. 11.
Rissoa deliciosa, Jeffr., p. 357.
„ *pernambucensis*, n. sp., p. 590, pl. xliv. fig. 9.
„ *xanthias*, n. sp., p. 588, pl. xliv. fig. 5.
„ (*Ceratia*) *pachia*, n. sp., p. 602, pl. xlv. fig. 7.
„ (*Cingula*) *rustica*, n. sp., p. 604, pl. xliv. fig. 11.
Rissoina dubiosa (?) (C. B. Adams), p. 616.
Scalaria funiculata, n. sp., p. 141, pl. ix. fig. 4.

Scalaria vermetiformis, n. sp., p. 141, pl. ix. fig. 6.
Scissurella aëdonia, n. sp., p. 114, pl. viii. fig. 3.
Seguenzia monocingulata (?) (Seg.), var. *lineata*, p. 106, pl. vii. fig. 1.
Siliquaria (*Tenagodus*), sp.
Solarium, sp.
Strombus pugilis, Linne, p. 416.
Trachysma delicatum (Phil.), p. 138.
Triforis perversa (Linne), p. 560.
Trochus (*Margarita*) *duophierus*, n. sp., p. 90, pl. v. fig. 3.
,, (*Omphalius*) *hotessierianus*, d'Orb., p. 71.
,, sp.
Trophon aculeatus, n. sp., p. 169, pl. x. fig. 9.
Turbo (?), sp.
Turritella exoleta (Linne), p. 467.
Velutina, sp.
Xenophora caribœa, Petit, p. 462.

September 14–26, 1873. Bahia. 7 to 20 fathoms.

Cypræa, sp.
Fusus marmoratus, Phil., p. 192.
Marginella fulminata, Kiener, p. 264.

Station 133. October 11, 1873. Lat. 35° 41′ S., long. 20° 55′ W. Mid South Atlantic. 1900 fathoms. Globigerina ooze. Bottom temperature 35°·4 Fahr.

Ianthina rotundata, Leach, p. 134.
Pleurotoma (*Spirotropis*) *aganactica*, n. sp., p. 323, pl. xxvi. fig. 8.

October 15, 1873. "Dead shells from the shore of Tristan da Cunha."

Crepidula onyx, Sow., p. 460.
Ranella (*Argobuccinum*) *argus* (Gmel.), p. 400.
Siphonaria (*Liriola*) *tristensis*, Leach, p. 675.

October 16, 1873. Inaccessible Island, Tristan da Cunha. Shore.

Siphonaria tristensis, Leach, p. 675.

Station 135c. October 17, 1873. Lat. 37° 25′ 30″ S., long. 12° 28′ 30″ W. Nightingale Island, Tristan da Cunha. 100 to 150 fathoms.

Bittium aëdonium, n. sp., p. 553, pl. xli. fig. 6.
,, *delicatum*, n. sp., p. 552, pl. xli. fig. 5.
,, *lusciniæ*, n. sp., p. 545, pl. xli. fig. 1.
,, *philomelæ*, n. sp., p. 546, pl. xli. fig. 2.
,, *pigrum*, n. sp., p. 545, pl. xl. fig. 7.
,, sp.
Buccinum (?), sp.
Cylichna cylindracea (Pennant), p. 663.
Emarginula, sp.
Lachesis, sp.
Murex (*Pseudomurex*) *aëdonius*, n. sp., p. 161, pl. xvii. fig. 5.
Odostomia (*Turbonilla*) *philomelæ*, n. sp., p. 490, pl. xxxii. fig. 2.
Pleurotoma (*Thesbia*) *critima*, n. sp., p. 329, pl. xxiii. fig. 2.
Ranella (*Argobuccinum*) *argus* (Gmel.), p. 400.
Rissoa (*Alvania*) *lusciniæ*, n. sp., p. 597, pl. xliv. fig. 3.
,, (*Ceratia*) *glaphyra*, n. sp., p. 601, pl. xlv. fig. 6.
,, ,, *macra*, n. sp., p. 603, pl. xlv. fig. 10.
,, (*Onoba*) *aëdonis*, n. sp., p. 600, pl. xlv. fig. 5.
,, ,, *arenaria* (Migh.), p. 598.
,, (*Setia*) *philomelæ*, n. sp., p. 609, pl. xlv. fig. 2.
Scalaria philtata, n. sp., p. 142, pl. ix. fig. 5.
Scissurella aëdonia, n. sp., p. 114, pl. viii. fig. 3.
,, β, sp.
,, γ, sp.
Triforis hebes, n. sp., p. 563, pl. xliii. fig. 7.
Triton (*Simpulum*) *philomelæ*, n. sp., p. 391, pl. xiv. fig. 10.

October 29–December 16, 1873. Sea Point, near Cape Town. Shore.

Columbella mercatoria, Lam., p. 233.
Fissurella mutabilis, Sow., p. 33.
,, (*Lucapina*) *fumata* (?), Reeve, p. 34.
Marginella (*Glabella*) *chrysea*, n. sp., p. 267, pl. xvi. fig. 8.
Mitra, sp.
Patella granatina, Linne, p. 27.
Trochus (*Gibbula*) *zonatus*, Krauss, p. 76, pl. vi. fig. 7.

December 1873. Simons Bay, Cape of Good Hope. 15 to 20 fathoms.

Ancilla (*Anaulax*) *obtusa*, Swainson, p. 229.
Aplysia depilans, Linne, p. 673.
Bullia lævigata (Chemnitz), p. 190.
Cerithium vulgatum, Brug., p. 532.
Cominella porcata (Gmel.), p. 214.
Dentalium dentalis, Linne, p. 11.
Dolabrifera triangularis, n. sp., p. 673, pl. L. fig. 7.
Fusus verruculatus, Lam., p. 195.
Odostomia, sp.
Phasianella, sp. (not *pulla*, nor *capensis*, nor *kochi*).
Rissoa (*Onoba*) *fenestrata*, Krauss, p. 597.
Strombus lentiginosus, Linne, p. 415.
Trochus (*Monilea*) *benzi*, Krauss, p. 71.
,, sp.
Turritella knysnäensis, Krauss, p. 468.

Station 141. December 17, 1873. Lat. 34° 41′ S., long. 18° 36′ E. 25 miles S.S.E. from Cape of Good Hope. 98 fathoms. Green sand. Bottom temperature 49°·5 Fahr.

Ancilla (*Anaulax*) *montrouzieri*, Souv., p. 229.
Fusus (*Sipho*) *pyrrhostoma*, n. sp., p. 208, pl. xii. fig. 2.
Voluta (*Volutilithes*) *abyssicola*, Adams and Reeve, p. 258, pl. xv. fig. 1.

Station 142. December 18, 1873. Lat. 35° 4′ S., long. 18° 37′ E. 45 miles S.S.E. from the Cape of Good Hope. 150 fathoms. Green sand. Bottom temperature 47° Fahr.

Cancellaria imbricata, n. sp., p. 274, pl. xviii. fig. 10.
Fasciolaria rutila, n. sp., p. 242, pl. xiii. fig. 6.
Fusus radialis, n. sp., p. 195, pl. xiv. fig. 2.
Marginella (*Glabella*) *musica*, Hinds., p. 265.
Natica psila, n. sp., p. 443, pl. xxviii. fig. 1.
Pleurotoma (*Surcula*) *anteridion*, n. sp., p. 295, pl. xix. fig. 6.
Voluta (*Volutilithes*) *abyssicola*, Adams and Reeve, p. 258, pl. xv. fig. 1.
Pleurotoma (?).

Station 144A. December 26, 1873. Lat. 46° 48′ S., long. 37° 49′ 30″ E. Off Marion Island. 50 to 75 fathoms. Volcanic sand.

Lamellaria, sp.
Rissoa (*Setia*) *marionensis*, n. sp., p. 607, pl. xliv. fig. 12.
Trochus (*Photinula*) *expansus* (Sow.), p. 69.

Station 144B. As above. 100 fathoms.

Cerithium, sp.
Puncturella noachina (Linne) var. *princeps*, Migh., p. 42.
Trophon declinans, n. sp., p. 168, pl. x. fig. 10.
Turritella australina, n. sp., p. 470, pl. xxix. fig. 2.
Triton (*Lagena*) *magellanicus* (Chem.), p. 395.

Station 145. December 27, 1873. Lat. 46° 43′ S., long. 38° 4′ 30″ E. Half way between Marion Island and Prince Edward Island. 50 to 150 fathoms. Volcanic sand.

Alaba (*Diala*) *limnæiformis*, n. sp., p. 567, pl. xli. fig. 7.
Cyclostrema (?), sp.
Dentalium entalis, Linne, var. *orthrum*, p. 6.
Emarginula, sp.
Eulima amblia, n. sp., p. 521, pl. xxxvii. fig. 4.
Fusus (*Neptunea*) *edwardiensis*, n. sp., p. 204, pl. xii. fig. 6.
Homalogyra atomus, Phil., p. 120.
Jeffreysia edwardiensis, n. sp., p. 584, pl. xliii. fig. 5.
Natica fartilis, n. sp., p. 446, pl. xxvii. fig. 10.
Odostomia rissoïdes, Hanl., p. 481.
Pleurotoma (*Theebia*) *translucida*, n. sp., p. 330, pl. xxv. fig. 11.
Puncturella noachina (Linne), var. *princeps*, Migh., p. 42.
Rissoa (*Ceratia*) *transenna*, n. sp., p. 603, pl. xlv. fig. 9.
„ (*Setia*) *edwardiensis*, n. sp., p. 610, pl. xlv. fig. 11.
„ „ *marionensis*, n. sp., p. 607, pl. xliv. fig. 12.
„ „ *principis*, n. sp., p. 608, pl. xliv. fig. 13.
Scissurella crispata, Flem., p. 113.
Trochus (*Photinula*) *expansus* (Sow.), p. 69.

Station 145A. December 27, 1873. Lat. 46° 41′ S., long. 38° 10′ E. Off Prince Edward Island. 310 fathoms. Volcanic sand.

Puncturella noachina (Linne), var. *princeps*, Migh., p. 42.

Station 146. December 29, 1873. Lat. 46° 46′ S., long. 45° 31′ E. Off Marion and Prince Edward Islands. 1375 fathoms. Globigerina ooze. Bottom temperature 35°·6 Fahr.

Fusus (*Neptunea*) *setosus*, n. sp., p. 202, pl. xii. fig. 4.
Lamellaria, sp.
Pleurobranchus, sp.
Pleurotoma (*Surcula*) *staminea*, n. sp., p. 286, pl. xx. fig. 3.
Trochus (*Margarita*) *infundibulum*, n. sp., p. 84, pl. v. fig. 15.

Station 147. December 30, 1873. Lat. 46° 16′ S., long. 48° 27′ E. Between Marion Island and the Crozets. 1600 fathoms. Diatom ooze. Bottom temperature 34°·2 Fahr.

Fusus (*Neptunea*) *calathiscus*, n. sp., p. 201, pl. xii. fig. 3.
„ „ *setosus*, n. sp., p. 202, pl. xii. fig. 4.
Guivillea alabastrina, n. gen. and sp., p. 262, pl. xv. fig. 2.
Pleurotoma (*Pleurotomella*) *papyracea*, n. sp., p. 338, pl. xx. fig. 5.

Station 149. January 9, 1874. Lat. 49° 8′ S., long. 70° 12′ E. Betsy Cove, Kerguelen. 15 to 25 fathoms. Volcanic mud.

Natica (*Amauropsis*) *perscalpta*, v. Mart., p. 454, pl. xxviii. fig. 4.
Neobuccinum eatoni, E. A. Sm., p. 216.
Neobuccinum vestitum, v. Mart., p. 216.
Patella kerguelensis, E. A. Sm., p. 27.

Station 149B. January 17, 1874. Lat. 49° 28′ S., long. 70° 30′ E. Near entrance of Royal Sound, Kerguelen. 25 fathoms. Volcanic mud.

Cancellaria (*Admete*) *specularis*, n. sp., p. 274, pl. xviii. fig. 11.
Eatoniella subrufescens (E. A. Sm.), p. 614.
Fusus (*Euthria*) *fuscatus* (Brug.), p. 209.
Natica grisea, v. Mart., p. 432, pl. xxviii. fig 5.
Neobuccinum eatoni, E. A. Sm., p. 216.

Neobuccinum vestitum, v. Mart., p. 216.
Pleurotoma (*Spirotropis*) *studeriana*, v. Mart., p. 322, pl. xxv. fig. 7.
„ (*Thesbia*) *translucida*, n. sp., p. 330, pl. xxv. fig. 11.
Struthiolaria mirabilis, E. A. Sm., p. 414.
Trophon albolabratus, E. A. Sm., p. 165.
Trochus (*Photinula*) *expansus* (Sow.), p. 69.

Station 149c. January 19, 1874. Lat. 49° 32′ S., long. 70° E. Balfour Bay, Royal Sound, Kerguelen. 60 fathoms. Volcanic mud.

Actæon (*Actæonina*) *edentula*, n. sp., p. 632, pl. xlvii. fig. 6.
Cancellaria (*Admete*), sp.
Fusus (*Euthria*) *chloroticus*, v. Mart., p. 209, pl. xviii. fig. 8.
Litorina setosa, E. A. Sm., p. 575.
Natica fartilis, n. sp., p. 446, pl. xxvii. fig. 10.
„ (*Lunatia*) *prasina*, n. sp., p. 449, pl. xxvii. fig. 9.
Natica (*Amauropsis*) *suturalis*, n. sp., p. 455, pl. xxvii. fig. 4.
Patella fuegiensis, Reeve, p. 26.
Puncturella noachina (Linne), var. *princeps*, Migh., p. 42.
Struthiolaria mirabilis, E. A. Sm., p. 414.
Trophon albolabratus, E. A. Sm., p. 165.
Trochus (*Photinula*) *expansus* (Sow.), p. 69.

January 19–20, 1874. Royal Sound, Kerguelen. Shore.

Eatoniella caliginosa (E. A. Sm.), p. 614.
Hydrobia caliginosa (Gould), p. 613.
Patella fuegiensis, Reeve, p. 26.
Rissoa (*Setia*) *australis*, n. sp., p. 608, pl. xlv. fig. 1.
Rissoa (*Setia*) *principis*, n. sp., p. 608, pl. xliv. fig. 13.
„ „ *sinapi*, n. sp., p. 610, pl. xlv. fig. 13.
Scissurella obliqua, n. sp., p. 116, pl. viii. fig. 5.
Skenea subcanaliculata, E. A. Sm., p. 624.

January 1874. Kerguelen. Rocks.

Neobuccinum eatoni, E. A. Sm., p. 216.
Patella fuegiensis, Reeve, p. 26.
Patella kerguelensis, E. A. Sm., p. 27.

Station 149d. January 20, 1874. Lat. 49° 28′ S., long. 70° 13′ E. Royal Sound, Kerguelen. 28 fathoms. Volcanic mud.

Buccinum albozonatum, n. sp., p. 212, pl. xiii. fig. 7.
Cancellaria (*Admete*) *carinata*, n. sp., p. 275, pl. xviii. fig. 9.
Fusus (*Euthria*) *chloroticus*, v. Mart., p. 209, pl. xviii. fig. 8.
„ (*Neptunea*) *regulus*, n. sp., p. 204, pl. xiii. fig. 7.
Natica grisea, v. Mart., p. 432, pl. xxviii. fig. 5.
„ (*Amauropsis*) *perscalpta*, v. Mart., p. 454, pl. xxviii. fig. 4.
„ (*Lunatia*) *prasina*, n. sp., p. 449, pl. xxvii. fig. 9.
Neobuccinum vestitum, v. Mart., p. 216.
Pleurotoma (*Thesbia*) *corpulenta*, n. sp., p. 331, pl. xxv. fig. 8.
Pleurotoma (*Spirotropis*) *studeriana*, v. Mart., p. 322, pl. xxv. fig. 7.
„ (*Thesbia*) *translucida*, n. sp., p. 330, pl. xxv. fig. 11.
„ „ *platamodes*, n. sp., p. 332, pl. xxiv. fig. 3.
„ (*Typhlomangelia*) *fluctuosa*, n. sp., var. *cariosa*, p. 319, pl. xxv. fig. 4.
„ sp.
Struthiolaria mirabilis, E. A. Sm., p. 414.
Trochus (*Photinula*) *expansus* (Sow.), p. 69.
Trophon albolabratus, E. A. Sm., p. 165.
„ *septus*, n. sp., p. 170, pl. x. fig. 11.
Turritella austrina, n. sp., p. 470, pl. xxix. fig. 2.
Volutomitra fragillima, n. sp., p. 263, pl. xiv. fig. 7.

Station 149F. January 27, 1874. Lat. 48° 55′ S., long. 69° 31′ E. Off Howe's Foreland, Kerguelen. 95 fathoms. Volcanic mud.

Fusus (*Euthria*) *chloroticus*, v. Mart., p. 209, pl. xviii. fig. 8.
Natica grisea, v. Mart., p. 432, pl. xxviii. fig. 5.

Station 149G. January 29, 1874. Lat. 48° 50′ S., long. 69° 18′ E. Off London River, Kerguelen. 110 fathoms. Volcanic mud.

Dentalium ægeum, n. sp., p. 2, pl. i. fig. 2.

Station 149H. January 29, 1874. Lat. 48° 45′ S., long. 69° 14′ E. Kerguelen. 127 fathoms. Volcanic mud.

Alaba (*Diala*), sp.

Station 149J. January 29, 1874. Lat. 48° 43′ S., long. 69° 15′ E. Off Cumberland Bay, West Christmas Harbour, Kerguelen. 105 fathoms. Volcanic mud.

Fusus (*Euthria*) *chloroticus*, v. Mart., p. 209, pl. xviii. fig. 8.
Pleurotoma (*Surcula*) *staminea*, n. sp., p. 286, pl. xx. fig. 3.
Provocator pulcher, n. gen. and sp., p. 260, pl. xiii. fig. 5.
Trochus (*Margarita*) *charopus*, n. sp., p. 78, pl. v. fig. 6.

Station 150. February 2, 1874. Lat. 52° 4′ S., long. 71° 22′ E. Between Kerguelen and Heard Island. 150 fathoms. Coarse gravel. Bottom temperature 35°·2 Fahr.

Fusus (*Sipho*) *futile*, n. sp., p. 207, pl. xii. fig. 9.
Natica fartilis, n. sp., p. 446, pl. xxvii. fig. 10.
„ *xantha*, n. sp., p. 445, pl. xxvii. fig. 8.
Pleurotoma (*Surcula*) *trilix*, n. sp., p. 287, pl. xxv. fig. 5.
Provocator pulcher, n. gen. and sp., p. 260, pl. xiii. fig. 5.
Trophon declinans, n. sp., p. 168, pl. x. fig. 10.
„ *scolopax*, n. sp., p. 171, pl. x. fig. 12.
„ sp.

February 6, 1874. Heard Island. S.S.E. of Kerguelen. Among seaweed on the shore.

Patella kerguelensis, E. A. Sm., p. 27.

Station 151. February 7, 1874. Lat. 52° 59′ 30″ S., long. 73° 33′ 30″ E. Off Heard Island. 75 fathoms. Volcanic mud.

Cancellaria (*Admete*) *specularis*, n. sp., p. 274, pl. xviii. fig. 11.
Natica (*Lunatia*) *grœnlandica*, Beck, p. 447.
Neobuccinum eatoni, E. A. Sm., p. 216.
„ *vestitum*, v. Mart., p. 216.
Pleurotoma (*Typhlomangelia*) *fluctuosa*, n. sp., p. 319, pl. xxv. fig. 4.
Struthiolaria mirabilis, E. A. Sm., p. 414.
Trochus (*Margarita*) *charopus*, n. sp., var. *cæruleus*, p. 78, pl. v. fig. 6 b.
Trophon Geversianus (Pallas), var., p. 164.

Station 152. February 11, 1874. Lat. 60° 52′ S., long. 80° 20′ E. About 1000 miles south-east of Kerguelen. 1260 fathoms. Diatom ooze.

Trochus (*Margarita*) *brychia*, n. sp., p. 77, pl. v. fig. 7.

Station 157. March 3, 1874. Lat. 53° 55′ S., long. 108° 35′ E. Southern Ocean, south-west of Australia. 1950 fathoms. Diatom ooze. Bottom temperature 32°·1 Fahr.

Pleurotoma (*Surcula*) *lepta*, n. sp., p. 288, pl. xviii. fig. 7.

Station 160. March 13, 1874. Lat. 42° 42′ S., long. 134° 10′ E. South of Australia. 2600 fathoms. Red clay. Bottom temperature 33°·9 Fahr.

Dentalium leptoskeles, n. sp., p. 7, pl. i. fig. 6.

Station 161. April 1, 1874. Lat. 38° 22′ 30″ S., long. 144° 36′ 30″ E. Off the entrance to Port Philip, Melbourne. 33 fathoms. Sand.

Nassa (*Niotha*) *pauperata*, Lam., p. 176.
Natica effossa, n. sp., p. 439, pl. xxviii. fig. 3.
Trochus (*Euchelus*) *dunkeri*, Koch, p. 53.
Trochus (*Solariella*) *philippensis*, n. sp., p. 73, pl. vi. fig. 10.
Turritella philippensis, n. sp., p. 479, pl. xxx. fig. 6.
Typhis philippensis, n. sp., p. 162, pl. x. fig. 4.

Station 162. April 2, 1874. Lat. 39° 10′ 30″ S., long. 146° 37′ E. Off East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand and shells.

Actæon austrinus, n. sp., p. 628, pl. xlvii. fig. 3.
Bittium, sp.
Calyptræa calyptræformis (Lam.), p. 460.
Crepidula immersa (Ang.), p. 460.
Conus (*Leptoconus*) *anemone*, Lam., p. 385.
Cypræa piperata, Soland., p. 425.
„ (*Trivia*) *australis*, Lam., p. 427.
Eburna (*Zemira*) *australis*, Sow., p. 222.
Fasciolaria coronata, Lam., p. 241.
„ sp., probably young of preceding.
Fusus novæhollandiæ, Reeve, p. 195.
„ *pyrulatus*, Reeve, p. 192.
Litorina mauritiana (Lam.), p. 574.
Marginella (*Persicula*) *ovulum*, Sow., p. 270.
„ α, sp.
„ β, sp.
„ γ, sp.
„ δ, sp.
Mitra (*Nebularia*) *glabra* (?), Swainson, p. 246.
Murex (*Chicoreus*) *palmiferus*, Sow., p. 155.
„ (*Pteronotus*) *cordismei*, n. sp., p. 156, pl. x. fig. 5.
Murex (*Pteronotus*) *triformis*, Reeve, p. 156.
Nassa (*Niotha*) *pauperata*, Lam., p. 177.
Odostomia (*Parthenia*) *casta* (A. Adams), p. 487.
Pleurotoma (*Drillia*) *kymatoessa*, n. sp., p. 309, pl. xxvi. fig. 5.
„ „ *quoyi*, Desm., p. 304.
„ sp.
Rissoa, sp.
Stilifer crotaphis, n. sp., p. 525, pl. xxxvii. fig. 10.
Triforis α, sp.
„ β, sp.
Triton subdistortus, Lam., p. 390.
„ (*Epidromus*), sp.
Trochus (*Ziziphinus*) *tinctus*, n. sp., p. 63, pl. xvii. fig. 2.
„ sp.
Turritella accisa, n. sp., p. 476, pl. xxx. fig. 4.
„ *carlottæ*, n. sp., p. 478, pl. xxx. fig. 5.
„ *cordismei*, n. sp., p. 469, pl. xxix. fig. 1.
„ *lamellosa*, n. sp., p. 474, pl. xxix. fig. 6.
„ *runcinata*, n. sp., p. 475, pl. xxx. fig. 3.
Voluta (*Scaphella*) *undulata*, Lam., p. 257.

April 17–18, 1874. Port Jackson, Sydney. 2 to 10 fathoms.

Actæon (*Buccinulus*) *affinis* (A. Adams), p. 630.
„ „ *niveus*, Ang., p. 630.
Alaba (*Diala*) *phasianella*, Ang., p. 567.
„ „ n. sp.
Ancilla (*Amalda*) *oblonga*, Sow., p. 231.
Aplustrum scabrum (Chem.), p. 633.
Assiminea (?) sp.
Bittium cylindricum, n. sp., p. 550, pl. xxxix. fig. 5.

Bittium furvum, n. sp., p. 556, pl. xxxviii. fig. 5.
„ *granarium* (Kiener), p. 539.
Buccinum, sp.
Bulla ampulla, Linne, p. 637.
„ *australis*, Q. and G., p. 638.
Calyptræa calyptræformis, Lam., p. 460.
Cassis (*Semicassis*) *pila*, Reeve, p. 407.
„ sp.
Cerithium (*Lampania*) *australe*, Q. and G., p. 536.
Cithara (?) sp.
Columbella (*Mitrella*) *albomaculata*, Ang., p. 234.
„ „ *australis*, Gask., p. 235.
„ (*Atilia*) *filosa*, Ang., p. 235.
„ „ *puella*, Sow., p. 235.
„ α, sp.
„ β, sp.
„ γ, sp.
Cominella (*Adamsia*) *typica*, Dunker, p. 214.
Conus (*Leptoconus*) *jukesii*, Reeve, p. 385.
Crepidula aculeata (Gmel.), p. 458.
Cyclostrema α, sp.
„ β, sp.
„ γ, sp.
Cylichna arachis (Q. and G.), p. 662.
„ *cuticulifera* (E. A. Sm.), p. 663.
Emarginula (*Hemitoma*) *rugosa*, Q. and G., p. 35.
„ (*Tugalia*) *parmophoidea*, Q. and G., p. 35.
Eulima dissimilis, n. sp., p. 522, pl. xxxvii. fig. 5.
Fusus hanleyi, Ang., p. 194.
Haliotis nævosa, Martyn, p. 49.
Jeffreysia, sp.
Marginella (*Persicula*) *ovulum*, Sow., p. 270.
„ (*Glabella*) *turbinata*, Sow., p. 265.
„ sp.
Mathilda (*Cingulina*) *spina* (Crosse and Fisch.), p. 449.
Mitra (*Nebularia*) *rhodia*, Reeve, p. 246.
Nassa (*Alectrion*) *glans*, Linne; var. *suturalis*, Lam., p. 179.
„ (*Hima*) *paupera*, Gould, p. 186.
„ (*Niotha*) *pauperata*, Lam., p. 177.
Natica euzona, Recl., p. 432.
„ (*Neverita*) *conica*, Lam., p. 450.
„ „ *didyma*, Bolten, p. 450.
Nerita punctata, Q. and G., p. 132.
Odostomia (*Parthenia*) *casta* (A. Ad.), p. 487.
Odostomia (*Turbonilla*) *scalpidens*, n. sp., p. 489, pl. xxxii. fig. 1.
„ sp.
Oliva (*Olivella*) *leucozona*, Ad. and Ang., p. 225.
„ „ *nympha*, Ad. and Ang., p. 225.
Philine angasi (Crosse), p. 671.
„ sp.
Pleurotoma (*Crassispira*) *ovenii*, Gray, p. 312.
Purpura (*Cronia*) *amygdala*, Kiener, p. 172.
Pyrgula (?) sp.
Ranella (*Argobuccinum*) *leucostoma*, Lam., p. 401.
Ringicula doliaris, Gould, p. 634, pl. xlvii. fig. 8.
Rissoa (*Scrobs*) *badia*, n. sp., p. 612, pl. xlvi. fig. 3.
„ „ *scrobiculator*, n. sp., p. 611, pl. xlvi. fig. 4.
Rissoa β, sp.
„ δ, sp.
Rissoina cincta, Ang., p. 616.
Scalaria jukesiana, Forb., p. 139.
Scissurella, n. sp.
Skenea (?) sp.
Solarium (*Architectonica*) *reevei*, Hanl., p. 136.
Stomatella imbricata, Lam., p. 111.
„ (*Gena*) *nigra*, Q. and G., p. 112.
Struthiolaria scutulata (Martyn), p. 414.
Triforis, sp.
Triton (*Cabestana*) *spengleri* (Chem.), p. 393.
„ (*Simpulum*) *costatus* (Born), p. 390.
Trochus (*Bankivia*) *fasciatus* (Menke), p. 64.
„ (*Clanculus*) *clangulus*, Wood, p. 51.
„ „ *floridus*, Phil., p. 52.
„ „ *homalomphalus*, A. Ad., p. 51.
„ „ *maugeri*, Wood, p. 51.
„ (*Leiopyrga*) *picturatus*, H. and A. Ad.; (not the *Trochus* (*Gibbula*) *picturata*, Ad. and Ang.), p. 65.
„ (*Solariella*) *albugo*, n. sp., p. 75, pl. vi. fig. 8.
„ „ *prodictus*, Fisch., p. 72.
„ „ *vitiligineus*, Menke, p. 72.
„ (*Trochocochlea*) *fuligineus*, A. Ad., p. 67, pl. iv. fig. 11.
„ (*Ziziphinus*) *decoratus*, Phil., p. 54.
„ α, sp.
„ β, sp.
Turbo (*Ninella*) *stamineus* (Martyn), p. 127.
„ (*Uvanilla*) *tentoriiformis* (Jonas), p. 131.
Turritella sinuata, Reeve, p. 469.
„ sp.
Utriculus avenarius, n. sp., p. 658, pl. xlix. fig. 5.
„ sp.
„ n. gen.

April 23, 1874. Port Jackson, Sydney. 6 to 15 fathoms.

Buccinum, sp.
Calyptræa calyptræformis, Lam., p. 460.
Columbella (Mitrella) australis, Gask, p. 235.
Cominella (Adamsia) typica, Dunker, p. 214.
Cylichna cuticulifera (E. A. Sm.), p. 663.
Emarginula (Scutus) anatinus (Don), p. 35.
Halœotis nævosa, Martyn, p. 49.
Nassa (Niotha) pauperata, Lam., p. 177.
Philine, sp.
Pleurobranchus, sp.
Pleurotoma (Drillia) metcalfei, Ang., p. 304.
Ringicula doliaris, Gould, p. 634, pl. xlvii. fig. 8.
Scalaria aculeata, Sow., p. 139.
Schismope carinata, n. sp., p. 119, pl. viii. fig. 6.
Struthiolaria scutulata (Martyn), p. 414.
Trochus (Clanculus) homalomphalus, A. Ad., p. 51.
„ *(Leiopyrga) picturatus*, H. and A. Ad., p. 65.

April 26, 1874. Port Jackson, Sydney. 4 to 18 fathoms.

Aplustrum scabrum (Chem.), p. 633.
Natica (Neverita) conica, Lam., p. 450.

May 1874. Port Jackson, Sydney. 6 to 7 fathoms.

Cancellaria undulata, Sow., p. 273.
Conus (Leptoconus) jukesii, Reeve, p. 385.
Crepidula aculeata (Gmel.), p. 458.
Cylichna arachis (Q. and G.), p. 662.
Eburna (Zemira) australis, Sow., p. 222.
Emarginula (Tugalia) parmophoïdea, Q. and G., p. 35.
Marginella (Glabella) turbinata, Sow., p. 265.
Natica sagittata, Menke, p. 433.
Oliva (Olivella) nympha, Ad. and Ang., p. 225.
Patella alticostata, Ang., p. 26.
„ *tramoserica*, Martyn, p. 27.
Terebra (Myurella) bicolor, Ang., p. 380.
Trochus (Clanculus) clangulus, Wood, p. 51.
„ „ *homalomphalus*, A. Ad., p. 51.
„ *(Elenchus) badius*, Wood, p. 63.
„ *(Euchelus) baccatus*, Menke, p. 53.
Turritella sinuata, Reeve, p. 469.

Station 163B. June 3, 1874. Lat. 33° 51′·15″ S., long. 151° 22′ 15″ E. Port Jackson, Sydney. 30 to 35 fathoms. Hard ground. Bottom temperature 63° Fahr.

Ancilla oblonga (Sow.), p. 231.
Bittium granarium (Kiener), p. 539.
Marginella (Glabella) agapeta, n. sp., p. 266, pl. xvi. fig. 9.
Nassa (Hima) paupera, Gould, p. 186.
„ *(Niotha) pauperata*, Lam., p. 177.
Natica effossa, n. sp., p. 439, pl. xxviii. fig. 3.
Pleurotoma xanthophaës, n. sp., p. 282, pl. xxvi. fig. 1.
Pleurotoma (Drillia) spadix, n. sp., p. 310, pl. xxvi. fig. 6.
„ sp.
Solarium (Torinia) rosulentum, n. sp., p. 137, pl. viii. fig. 12.
Trochus (Leiopyrga) picturatus, H. and A. Adams, p. 65.
Turritella sinuata, Reeve, p. 469.

Station 164B. June 13, 1874. Lat. 34° 13′ S., long. 151° 38′ E. Off Sydney. 410 fathoms. Green mud.

Fusus pagodoides, n. sp., p. 197, pl. xiv. fig. 3.
Nassaria campyla, n. sp., p. 405, pl. xiv. fig. 12.
Trochus (Gibbula) glyptus, n. sp., p. 75, pl. vi. fig. 8.
Trophon carduelis, n. sp., p. 167, pl. x. fig. 7.

Station 166. June 23, 1874. Lat. 38° 50′ S., long. 169° 20′ E. About 200 miles west of Cape Farewell, New Zealand. 275 fathoms. Globigerina ooze. Bottom temperature, 50°·8 Fahr.

Voluta (Cymbiola) lutea, n. sp., p. 255, pl. xv. fig. 3.
Fusus (Neptunea) valedictus, n. sp., p. 200, pl. xvii. fig. 7.

Station 167. June 24, 1874. Lat. 39° 32′ S., long. 171° 48′ E. New Zealand. 150 fathoms. Blue mud.

Ancilla (*Anaulax*) *pyramidalis* (Reeve), p. 230.

June 26, 1874. D'Urville Island, New Zealand. Beach.

Litorina cincta, Q. and G., p. 574.
Purpura (*Polytropa*) *scobina*, Q. and G., var. *albomarginata*, Desh., p. 173.
Siphonaria cancer, Reeve, p. 674.
Trochus (*Diloma*) *porcifer* (A. Ad.), p. 67, pl. iv. fig. 12.
Turbo smaragdus (Martyn), p. 125.

Station 167A. June 27, 1874. Lat. 41° 4′ S., long. 174° 19′ E. Queen Charlotte Sound, Cook's Strait, New Zealand. 10 fathoms. Mud.

Ancilla (*Anaulax*) *mucronata*, Sow., p. 229.
„ „ *nana*, n. sp., p. 230, pl. xvii. fig. 10.
Fusus (*Neptunea*) *mandarinus*, Ducl., p. 200.
„ „ *nodosus* (Martyn), p. 200.
Murex (*Phyllonotus*) *zelandicus*, Q. and G., p. 157.
Turritella carlottæ, n. sp., p. 478, pl. xxx. fig. 5.
„ *rosea*, Q. and G., p. 469.
Voluta (*Alcithoe*) *gracilis*, Swainson, p. 258.

Station 168. July 8, 1874. Lat. 40° 28′ S., long. 177° 43′ E. New Zealand. 1100 fathoms. Blue mud. Bottom temperature 37°·2 Fahr.

Nassa dissimilis, n. sp., p. 175, pl. xvii. fig. 6.
Pleurotoma (*Thesbia*) *membranacea*, n. sp., p. 333, pl. xxvi. fig. 9.
Pleurotoma (*Thesbia*) *xanthias*, n. sp., p. 334, pl. xxvi. fig. 10.

Station 169. July 10, 1874. Lat. 37° 34′ S., long. 179° 22′ E. North-east from New Zealand. 700 fathoms. Blue mud. Bottom temperature 40° Fahr.

Cadulus colubridens, n. sp., p. 18, pl. iii. fig. 1.
Dentalium diarrhox, n. sp., p. 4, pl. i. fig. 5.
Nassa (*Tritia*) *ephamilla*, n. sp., p. 187, pl. xi. fig. 9.
Natica amphiala, n. sp., p. 437, pl. xxvii. fig. 6.
„ *apora* (?), n. sp., p. 454, pl. xxvii. fig. 11.
Odostomia hyphala, n. sp., p. 483, pl. xxxi. fig. 2.
Pleurotoma ischna, n. sp., p. 280, pl. xxii. fig. 2.
„ (*Bela*) *ula*, n. sp., p. 312, pl. xxii. fig. 1.
„ (*Genota*) *engonia*, n. sp., p. 300, pl. xx. fig. 7.
„ (*Spirotropis*) *bulbacea*, n. sp., p. 325, pl. xxv. fig. 9.
„ (*Surcula*) *gypsata*, n. sp., p. 297, pl. xxv. fig. 1.
Utriculus (*Tornatina*) *pachys*, n. sp., p. 660, pl. xlix. fig. 8.

Tracy Island; Nares Harbour, Admiralty Islands.

Cerithium (*Vertagus*) *martinianum*, Pfeiffer, p. 538.

Wild Island, Admiralty Islands.

Dolium perdix, Linné, p. 412.
Trochus (*Chrysostoma*) *paradoxus* (Born), p. 92.

Station 171. July 15, 1874. Lat. 28° 33′ S., long. 177° 50′ W. 45 miles north of Kermadec Island. 600 fathoms. Hard ground. Bottom temperature 39°·5 Fahr.

Murex (*Phyllonotus*) *zelandicus*, Q. and G., p. 157.

From a box marked "Locality uncertain. Arafura Sea or Australia—New Zealand." [1]

Fusus colosseus, Lam., p. 191.
Pleurotoma (Surcula) leucotropis, Ad. and Reeve, p. 284.
Pleurotoma (Surcula) tuberculata, Gray, p. 285.

July 21, 1874. Reefs off Tongatabu.

Cerithium (Vertagus) asperum (Linne), p. 537.
Cypræa lynx, Linne, p. 423.
„ *vitellus*, Linne, p. 426.
Nassa (Alectryon) monile (Kiener), p. 180.
Strombus (Canarium) gibberulus, Linne, p. 416.
Triton (Gutturnium) elongatus, Reeve, p. 394.
Turbo (Senectus) chrysostomus, Linne, p. 126.

Station 172. July 22, 1874. Lat. 20° 58′ S., long. 175° 9′ W. Inside the reef, off Nukalofa, Tongatabu. 18 fathoms. Coral mud.

Actæon flammeus (Gmel.), p. 626.
Amalthea australis, Lam., p. 457.
Bittium perparvulum, n. sp., p. 554, pl. xxxviii. fig. 3.
Cæcum exile, n. sp., de Folin, p. 687, pl. (*Cæcidæ*) iii. figs. 20–22.
„ *sepimentum*, de Folin, var. *arcuata*, de Folin, p. 684.
„ α, sp.
„ β, sp.
Cerithium (Vertagus), n. sp.
Columbella (Conidea) flava (Brug.), p. 239.
Eulima, sp.
Mitra (Cancilla) interlirata, Reeve, p. 248.
Mucronalia xanthias, n. sp., p. 523, pl. xxxvii. fig. 8.
Murex (Phyllonotus) zelandicus, Q. and G., p. 157.
Nassa (Niotha) stigmataria, A. Ad., p. 178.
Natica (Mamma) aurantia, Lam., p. 451.
Oliva (Galeola) picta, Reeve, p. 224.
„ sp.
Phos nodicostatus, A. Ad., p. 217.
Pleurotoma (Drillia) climacota, n. sp., p. 307, pl. xviii. fig. 1.
Ranella (Argobuccinum) pusilla, Brod., p. 402.
Rissoa α, sp.
„ (?) β, sp.
Scaliola bella, A. Ad., p. 623.
Terebellum punctatum, Chem., p. 421.
Terebra, sp.
Trochus (Monilea) belcheri, Phil., p. 71.
Turbo (Senectus) chrysostomus, Linne, p. 126.

Station 173. July 24, 1874. Lat. 19° 9′ 35″ S., long. 179° 41′ 50″ E. Off Matuka, Fiji. 310 to 315 fathoms. Coral mud.

Cerithium matukense, n. sp., p. 533, pl. xl. fig. 2.
Fusus (Sipho) libratus, n. sp., p. 206, pl. xii. fig. 8.
Ranella fijiensis, n. sp., p. 397, pl. xxxiv. fig. 7.
Turbo (Calcar) henicus, n. sp., p. 130, pl. vi. fig. 11.
Xenophora, n. sp.

July 24, 1874. Matuka, Fiji. Beach.

Planaxis sulcatus (Born), p. 573.

July 29, 1874. Levuka, Fiji. 12 fathoms.

Actæon flammeus (Gmel.), p. 626.
„ (*Buccinulus*) *cinereus*, n. sp., p. 631, pl. xlvii. fig. 5.
Alaba (Stiliferina) striata, n. sp., p. 569, pl. xlii. fig. 6.
Amalthea acuta (Q. and G.), p. 457.
Atys cylindrica (Helbling), p. 639.
„ *debilis*, Pease, p. 640.
„ *hyalina*, n. sp., p. 640, pl. xlviii. fig. 1.
„ *parallela* (?), Gould, p. 640.
„ (*Dinia*) *dentifera*, A. Ad., p. 641.
Barleeia imbricata, n. sp., p. 584, pl. xliii. fig. 2.

[1] The whole of the shells in this box—not those given above only, but the bivalves also—seem to indicate a confusion such as is implied by the heading.

Bulla australis, Q. and G., p. 638.
Capulus (?), Gould.
Cerithiopsis balteata, n. sp., p. 526, pl. xxx. fig. 1.
„ sp.
Cerithium balteatum, Phil., p. 530.
„ *columna* (?), Sow., p. 531.
„ *dubium*, Sow., p. 532.
„ *lissum*, n. sp., p. 535, pl. xl. fig. 4.
„ *phœnum*, n. sp., p. 534, pl. xl. fig. 3.
„ *salebrosum*, Sow., p. 532.
„ (*Vertagus*) *asperum* (Linne), p. 537.
Columbella (*Mitrella*) *albina*, Kiener, p. 234.
„ (*Pusiostoma*) *mendicaria* (Linne), p. 239.
„ (*Zafra*) *troglodytes*, Souv., p. 240.
Conus (*Cylinder*) *textile*, Linne, p. 388.
„ (*Leptoconus*) *vittatus* (?), Hwass, p. 387.
„ (*Lithoconus*) *eburneus*, Hwass, p. 384.
„ (*Puncticulis*) *arenatus*, Hwass, p. 382.
Cyclostrema α, sp.
„ β, sp.
„ γ, sp.
Cypræa microdon, Gray, p. 424.
Cylichna (*Mnestia*) *bizona*, A. Ad., p. 671.
„ *cuticulifera* (E. A. Sm.), p. 663.
Dentalium tornatum, n. sp., p. 13, pl. ii. fig. 3.
Eulima fallax, n. sp., p. 517, pl. xxxvi. fig. 7.
Fasciolaria (*Latirus*) *strangei*, A. Ad., p. 245, pl. xiv. fig. 4.
Marginella, sp.
Mitra (*Callithea*) *obeliscus*, Reeve, p. 252.
„ „ *granosa* (Chem.), p. 252.
„ (*Cancilla*) *cyri*, Dohrn., p. 247.
„ „ *filaris* (Linne), p. 247.
„ „ *interlirata*, Reeve, p. 248.
„ „ *verrucosa*, Reeve, p. 249.
„ (*Costellaria*) *amanda*, Reeve, p. 249.
„ „ *exasperata* (Chem.), p. 250.
„ „ *fusiformis*, Kiener, p. 250.
„ „ *nodilirata* (?), A. Ad., p. 251.
„ „ *radius*, Reeve, p. 251.
„ (*Pusia*) *nodulifera*, A. Ad., p. 252.
„ (*Scabricola*) *crenifera*, Lam., p. 246.
„ „ *sphærulata*, Martyn, p. 247.
„ sp.
Murex (*Tribulus*) *ternispina*, Lam., p. 149.
Nassa agapeta, n. sp., p. 174, pl. xi. fig. 6.
„ (*Arcularia*) *granifera* (Kiener), p. 178.
Nassa (*Hebra*) *echinata*, A. Ad., p. 184.
„ „ *muricata*, Q. and G., p. 184.
„ (*Niotha*) *stigmaria*, A. Ad., p. 178.
„ (*Zeuxis*) *levukensis*, n. sp., p. 181, pl. xi. fig. 3.
„ sp.
Natica pseustes, n. sp., p. 444, pl. xxvii. fig. 3.
„ sp.
Neritina, sp.
Odostomia (*Styloptygma*) α, sp. (This is a worn specimen of an unnamed species in the British Museum, from the Sandwich Islands.)
„ β, sp.
Pisania (*Cantharus*) *undosa* (Linne), p. 215.
Pleurotoma monilifera (Pease), p. 278.
„ *marmorata*, Lam., p. 277.
„ *tigrina*, Lam., p. 279.
„ (*Mangelia*) *levukensis*, n. sp., p. 340, pl. xxiii. fig. 7.
„ „ *nitens*, Hinds, p. 339.
„ (*Surcula*) *brevicaudata*, Reeve, p. 284.
Pyramidella nodicincta, A. Ad., p. 480.
Ranella (*Lampas*) *granifera*, Lam., p. 399.
„ (*Argobuccinum*) *pusilla*, Brod., p. 402.
Rissoina triticea, Pease, p. 617.
„ *transenna*, n. sp., p. 620, pl. xlvi. fig. 10.
Siphodentalium dichelum, n. sp., p. 15, pl. ii. fig. 7.
Strombus (*Canarium*) *gibberulus*, Linne, p. 416.
„ „ *rugosus*, Sow., p. 417.
„ „ *rupellii*, Reeve, p. 418.
„ (*Gallinula*) *vittatus*, Linne, p. 420.
Terebra albomarginata, Desh., p. 377.
„ *conspersa*, Hinds, p. 377.
„ *maculata* (Linne), p. 378.
„ *muscaria*, Lam., p. 378.
„ *straminea*, Gray, p. 379.
„ (*Myurella*) *amœna*, Desh., p. 380.
„ „ *babylonia*, Lam., p. 380.
„ „ *undulata*, Gray, p. 381.
Triforis levukensis, n. sp., p. 561, pl. xxxix. fig. 4.
Triton (*Cymatium*) *tuberosus*, Lam., p. 393.
Trochus niloticus, Linne, p. 50.
„ (*Solariella*) *lamprus*, n. sp., p. 74, pl. vi. fig. 9.
„ sp.
Turbo (*Senectus*) *chrysostomus*, Linne, p. 126.
„ (*Bolina*) *lapillus*, Reeve, p. 131.
Turritella cingulifera, Sow., p. 467.
„ *fascialis*, Menke, p. 468.
Utriculus famelicus, n. sp., p. 653, pl. xlix. fig. 1.
„ (*Tornatina*) *voluta* (Q. and G.), p. 656.
„ sp.

July 1874. Kandavu, Fiji. Reefs.

Columbella, sp.

Turbo smaragdus (Martyn), p. 125.

August 1874. Kandavu, Fiji. Inhabited by land crabs.

Cerithium tuberculatum, Linne, var. *variegatum*, Quoy.[1]

Nerita albicilla, Linne, p. 678.

Purpura pica, de Blainville, p. 679.

Turbo (*Lunella*) *coronatus*, Gmel., var. *granulatus*, Gmel., p. 678.

Station 174C. August 3, 1874. Lat. 19° 7′ 50″ S., long. 178° 19′ 35″ E. Off Kandavu, Fiji. 610 fathoms. Coral mud. Bottom temperature 39° Fahr.

Gaza dædala, n. gen. and sp., p. 93, pl. vii. fig. 12.

Station 174D. August 3, 1874. Lat. 19° 5′ 50″ S., long. 178° 16′ 20″ E. Kandavu, Fiji, outside the reef. 210 fathoms. Coral mud.

Clathurella (*Daphnella*) *compsa*, n. sp., p. 366, pl. xix. fig. 9.

August 16, 1874. New Hebrides. Shore.

Natica (*Neverita*) *albumen* (Linne), p. 450.

Station 184. August 29, 1874. Lat. 12° 8′ S., long. 145° 10′ E. East of Cape York, North-east Australia. 1400 fathoms. Globigerina ooze. Bottom temperature 36° Fahr.

Basilissa superba, n. gen. and sp., p. 101, pl. vii. fig. 10.

Fossarus cereus, n. sp., p. 582, pl. xliii. fig. 4.

Station 185B. August 31, 1874. Lat. 11° 38′ 15″ S., long. 143′ 59° 38″ E. Off Raine Island, Cape York. 155 fathoms. Coral sand.

Aclis minutissima, n. sp., p. 504, pl. xxxiii. fig. 9.
Bittium porcellanum, n. sp., p. 556, pl. xxxviii. fig. 8.
Bulla, sp.
Cadulus simillimus, n. sp., p. 20, pl. iii. fig. 6.
Cylichna crispula, n. sp., p. 666, pl. xlix. fig. 12.
Eulima acerrima, n. sp., p. 513, pl. xxxvi. fig. 1.
„ *campyla*, n. sp., p. 516, pl. xxxvi. fig. 6.
„ *eurychades*, n. sp., p. 522, pl. xxxvii. fig. 7.
Eulimella acerrima, n. sp., p. 496, pl. xxxiii. fig. 3.
„ *laxa*, n. sp., p. 497, pl. xxxiii. fig. 6.
Marginella (*Glabella*) *alta*, n. sp., p. 268, pl. xvi. fig. 2.
„ „ *brachia*, n. sp., p. 268, pl. xvi. fig. 4.
Marginella (*Glabella*) *pachia*, n. sp., p. 265, pl. xvi. fig. 5.
„ „ *valida*, n. sp., p. 267, pl. xvi. fig. 3.
Mitra (*Cancilla*) *interlirata*, Reeve, p. 248.
Nassa (*Alectryon*) *psila*, n. sp., p. 179.
Pleurotoma, sp. (belonging to the *Pleurotoma carinata* group).
Rissoa (?), sp. (same as that of Sept. 7, Torres Strait, and Sept. 8, Flinders Passage).
Scalaria arenosa, A. Ad., p. 623, pl. xlvi. fig. 11.
„ *bella*, A. Ad., p. 623.
Schismope carinata, n. sp., p. 119, pl. viii. fig. 6.
Scissurella declinans, n. sp., p. 115, pl. viii. fig. 2.
Siphodentalium prionotum, n. sp., p. 16, pl. ii. fig. 9.
Turritella deliciosa, n. sp., p. 471, pl. xxix. fig. 3.
Trochus, sp.
Utriculus (*Tornatina*) *leptekes*, n. sp., p. 656, pl. xlix. fig. 3.

[1] This species reached me out of time, and has been overlooked in the Report.

September 7, 1874. Torres Strait, North-east Australia. 3 to 11 fathoms.

Alaba (*Stiliferina*) *fulva*, n. sp., p. 571, pl. xlii. fig. 5.
Atys, sp.
Barleeia imbricata, n. sp., [p. 584, pl. xliii. fig. 2.
Bittium perparvulum, n. sp., p. 554, pl. xxxviii. fig. 3.
,, *xanthum*, n. sp., p. 557, pl. xxxviii. fig. 6.
,, sp.
Cerithiopsis α, sp.
,, β, sp.
,, γ, sp.
Cyclostrema, sp.
Cylichna (*Volvula*) *sulcata*, n. sp., p. 670, pl. l. fig. 6.
Dentalium javanum, Sow., p. 12.
Eulimella subtilis, n. sp., p. 499, pl. xxxiii. fig. 5.
Latirus, n. sp.
Natica, sp.
Odostomia (*Turbonilla?*) *amœbæa*, n. sp., p. 495, pl. xxxiii. fig. 1.
,, α, sp.
Odostomia β, sp.
,, γ, sp.
Oliva (*Ispidula*) *australis*, Duclos, p. 223.
Phasianella, sp.
Puncturella, n. sp. (?), same as that of Sept. 8, Flinders Passage; also Stations 186 and 187, p. 42.
Ringicula pusilla, n. sp., p. 635, pl. xlvii. fig. 9.
Rissoa (*Alvania*) *trajectâs*, n. sp., p. 596, pl. xliv. fig. 6.
,, sp., same as that of Station 185 and Sept. 8, Flinders Passage.
Scalaria, sp.
Scaliola arenosa, A. Ad., p. 623, pl. xlvi. fig. 11.
,, *bella*, A. Ad., p. 623.
,, *caledonica*, Crosse, p. 624.
Siphodentalium eboracense, n. sp., p. 17, pl. ii. fig. 10.
Skenea (?), sp.
Triforis α, sp.
,, β, sp.
Trochus, sp.
Turritella cingulifera, Sow., p. 467.
Utriculus simillimus, n. sp., p. 654, pl. xlix. fig. 2.
,, (*Tornatina*), sp.

September 8, 1874. Flinders Passage, Cape York, North-east Australia. 7 fathoms.

Actæon (*Buccinulus*) *insculptus* (?) (Reeve), p. 630.
Alaba (*Stiliferina*) *goniochila*, A. Ad., p. 569, pl. xlii. fig. 4.
Barleeia imbricata, n. sp., p. 584, pl. xliii. fig. 2.
Bittium perparvulum, n. sp., p. 554, pl. xxxviii. fig. 3.
,, β, sp.
,, γ, sp.
Cadulus simillimus, n. sp., p. 20, pl. iii. fig. 6.
Cæcum attenuatum, n. sp., de Folin, p. 684, pl. (*Cæcidæ*) ii. figs. 9–11.
Cerithiopsis α, sp.
,, β, sp.
Cerithium dubium, Sow., p. 532.
,, sp. (same as that at Station 186).
Cylichna, sp.
Dentalium javanum, Sow., p. 12.
Eulima martinii, A. Ad., p. 505.
,, *latipes*, n. sp., p. 515, pl. xxxvi. fig. 3.
,, ,, β, sp.
Eulimella angusta, n. sp., p. 497, pl. xxxiii. fig. 7.
Litorina (*Hamus*) *montrouzieri* (Fischer), p. 576.
Marginella, sp.
Mathilda, sp.
Mitra reticulata, A. Ad., p. 249.
Murex (*Pseudomurex*) *pholidotus*, n. sp., p. 158, pl. x. fig. 3.
Neritina souverbiana, Montrouzier.
Odostomia convoluta, n. sp., p. 482, pl. xxxiii. fig. 8.
,, *oodes*, n. sp., p. 485, pl. xxxi. fig. 5.
,, *oxia*; n. sp., p. 484, pl. xxxi. fig. 4.
,, *pupa*, n. sp., p. 486, pl. xxxi. fig. 7.
,, (*Syrnola*) *aciculina*, Souv., p. 495.
,, (*Turbonilla*) *homœotata*, n. sp., p. 490, pl. xxxii. fig. 3.
,, (,,) *homœotata* (?).
,, (,,) *kymatodes*, n. sp., p. 486, pl. xxxi. fig. 8.
,, β, sp.
,, γ, sp.
,, δ, sp.
,, ζ, sp.
,, κ, sp.
,, (*Turbonilla*) *dipsycha*, n. sp., var. *incerta*, p. 494.
,, ,, λ, sp.
,, ,, μ, sp.

Odostomia (*Turbonilla*) ε, sp.
„ „ ζ, sp.
„ „ η, sp.
„ „ ι, sp.
Oliva, sp.
Phasianella, sp.
Pleurotoma (*Drillia*) *sterrha*, n. sp., p. 305, pl. xxi. fig. 3.
„ β, sp.
Puncturella, n. sp. (?) (same as that of Sept. 7, and of Stations 186 and 187, p. 42).
Ranella (*Eupleura*) *perca* (Perry), p. 402.
Ringicula assularum, n. sp., p. 635, pl. xlvii. fig. 10.
„ *pusilla*, n. sp., p. 635, pl. xlvii. fig. 9.
Rissoa (*Alvania*) *trajectâs*, n. sp., p. 596, pl. xliv. fig. 6.
„ α.
Rissoa γ (same as that at Station 185 and of Sept. 7).
Rissoina reticulata (?) (Sow.), p. 616.
„ *triangularis*, n. sp., p. 618, pl. xlvi. fig. 7.
„ α, sp.
Scaliola arenosa, A. Ad., p. 623, pl. xlvi. fig. 11.
„ *caledonica*, Crosse, p. 624.
Strombus (*Gallinula*) *campbellii*, Gray, p. 418.
Terebra, sp.
Triforis, sp.
Trochus (*Euchelus*) *atratus* (Gmel.), p. 52.
„ (*Solariella*) γ, sp.
„ „ δ, sp.
„ α, sp.
Turbo (*Senectus*) *chrysostomus*, Linne, p. 126.
„ sp.
Utriculus amphizostus, n. sp., p. 652, pl. xlviii. fig. 11.
„ *simillimus*, n. sp., p. 654, pl. xlix. fig. 2.
Vermetus (?) *cyclicus*, n. sp., p. 465, pl. xxxi. fig. 1.

Station 186. September 8, 1874. Lat. 10° 30′ S., long. 142° 18′ E. Wednesday Island, Cape York, North-east Australia. 8 fathoms. Coral mud.

Alaba (*Diala*) *albugo*, n. sp., p. 568, pl. xlii. fig. 3.
„ „ sp.
„ (*Stiliferina* ?) *fulva*, n. sp., p. 571, pl. xlii. fig. 5.
„ „ *goniochila*, A. Ad., p. 569, pl. xlii. fig. 4.
Assiminea (?), sp.
Atys hyalina, n. sp., p. 640, pl. xlviii. fig. 1.
„ (*Dinia*) *dentifera*, A. Ad., p. 641.
„ sp.
Barleeia imbricata, n. sp., p. 584, pl. xliii. fig. 2.
Bittium perparvulum, n. sp., p. 554, pl. xxxviii. fig. 3.
„ *pupiforme*, n. sp., p. 548, pl. xli. fig. 3.
„ α.
„ β.
„ γ.
Cæcum angustum, de Folin, n. sp., p. 688, pl. L. fig. 7.
„ *chinense*, de Folin, p. 685.
„ *eburneum*, de Folin, n. sp., p. 688, pl. L. fig. 9.
„ *microcylus*, de Folin, n. sp., p. 686, pl. (*Cæcidæ*) iii. figs. 17, 19.
„ *subflavum*, de Folin, n. sp., p. 685, pl. (*Cæcidæ*) ii. figs. 13, 14.
Cæcum succineum, de Folin, n. sp., p. 685, pl. (*Cæcidæ*) iii. figs. 15, 16.
„ „ sp.
„ β, sp.
„ γ, sp.
Capulus (*Amathina*) *tricarinatus* (Linne), p. 456.
Cerithiopsis ridicula, n. sp., p. 528, pl. xxxviii. fig. 1.
„ α, sp.
„ β, sp.
„ γ, sp.
„ δ, sp.
„ ε, sp.
Cerithium dubium, Sow., p. 532.
Columbella (*Zafra*) *troglodytes*, Souv., p. 240.
„ α, sp.
„ β, sp.
„ γ, sp.
Cyclostrema α, sp.
„ β, sp.
Cylichna reticulata, n. sp., p. 667, pl. L. fig. 2.
„ *sulcata*, n. sp., p. 670, pl. L. fig. 6.
„ α, sp.
„ β, sp.
Cypræa bicolor (?), Gask., p. 422.
„ *milaris*, Gmel., p. 424.
Eulima, var. sp., young.
Eulimella coacta, n. sp., p. 498, pl. xxxiii. fig. 4.
Leucorhynchia (?), sp.

Marginella α, sp.
„ β, sp.
„ γ, sp.
Mathilda, sp.
Mitra (*Costellaria*) *amanda*, Reeve, p. 249.
Mucronalia xanthias, n. sp., p. 523, pl. xxxvii. fig. 8.
Odostomia, sp.
„ var. sp.
„ (*Turbonilla*), var. sp.
Parastrophia challengeri, de Folin, n. sp., p. 681, pl. (*Cæcidæ*) i. fig. 1.
Phasianella, sp.
Pleurotoma α, sp.
„ β, sp.
„ , sp.
Puncturella, n. sp. (?), same as that at Sept. 7 and 8, and at Station 187.
Ringicula pusilla, n. sp., p. 635, pl. xlvii. fig. 9.
„ sp.
Rissoa (*Alvania*) *trajectâs*, n. sp., p. 596, pl. xliv. fig. 6.
„ (*Onoba*) *mercurialis*, n. sp., p. 600, pl. xlv. fig. 12.
Rissoina mercurialis, n. sp., p. 619, pl. xlvi. fig. 8.
Rissoina reticulata? (Sow.), p. 616.
„ *triangularis*, n. sp., p. 618, pl. xlvi. fig. 7.
Scalaria, sp.
Scaliola arenosa, A. Ad., p. 623, pl. xlvi. fig. 11.
„ *bella*, A. Ad., p. 623.
„ *caledonica*, Crosse, p. 624.
Scissurella, sp.
Skenea (?) sp.
Trachysma (?) sp.
Triforis dolicha, n. sp., p. 565, pl. xlii. fig. 1.
„ α, sp.
„ β, sp.
„ γ, sp.
„ δ, sp.
„ ε, sp.
„ ζ, sp.
Trochus (*Solariella*) *vitiligineus*, Menke, p. 72.
Utriculus amphizostus, n. sp., p. 652, pl. xlviii. fig. 11.
„ *similimus*, n. sp., p. 654, pl. xlix. fig. 2.
„ (*Tornatina*) *acrobeles*, n. sp., p. 657, pl. xlix. fig. 4.
„ „ sp.
Vermetus (?) *cyclicus*, n. sp., p. 465, pl. xxxi. fig. 1.
Watsonia elegans, de Folin, n. sp., p. 682, pl. (*Cæcidæ*) i. figs 4–6.

September 8, 1874. Albany Island, Cape York, North-east Australia. 3, 6, and 12 fathoms.

Cerithium balteatum, Phil., p. 530.
„ *novæhollandiæ*, A. Ad., p. 532.
„ (*Vertagus*) *turritum*, Sow., p. 538.
Mitra (*Cancilla*) *reticulata*, A. Ad., p. 249, pl. xiv. fig. 6.
„ „ *rufescens*, A. Ad., p. 249, pl. xiv. fig. 5.
„ (*Costellaria*) *sculptilis*, Reeve, p. 251.
„ „ α, sp.
„ „ β, sp.
Murex (*Chicoreus*) *cervicornis*, Lam., p. 154.
„ „ *maurus*, Brod., p. 154.
„ (*Tribulus*) *acanthodes*, n. sp., p. 151, pl. x. fig. 1.
„ „ *macgillivrayi*, Dohrn., p. 147.
Nassa (*Zeuxis*) *algida*, Reeve, p. 180.
Nassaria sinensis, Sow., p. 403.
Natica (*Mamma*) *mammilla* (Linne), p. 452.
Oliva (*Ispidula*) *australis*, Duclos, p. 223.
Phos scalaroïdes, A. Ad., p. 218.
„ (*Strongylocera*) *sculptilis*, A. Ad., p. 222, pl. xi. fig. 1.
Pleurotoma undosa, Lam., p. 279.
„ (*Drillia*) *sterrha*, n. sp., p. 305, pl. xxi. fig. 3.
Purpura (*Cronia*) *amygdala*, Kien., p. 172.
Ranella (*Argobuccinum*) *pusilla*, Brod., p. 402.
Strombus (*Canarium*) *muricatus*, Martini, p. 417.
„ (*Gallinula*) *campbellii*, Gray, p. 418.
„ „ *canarium*, Linne, p. 418.
Terebra (*Myurella*) *turrita*, E. A. Sm., p. 381, pl. xiv. fig. 8.
Trochus (*Euchelus*) *atratus* (Gmel.), p. 52.
Turritella fascialis, Menke, p. 468.
Voluta (*Vespertilio*) *sophia*, Gray, p. 253.
Xenophora solarioïdes (Reeve), p. 464.

Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. West of Cape York, North-east Australia. 6 fathoms. Coral mud.

Alaba (*Stiliferina*) *goniochila*, A. Ad., p. 569, pl. xlii. fig. 4.
„ „ *sulcata*, n. sp., p. 570, pl. xlii. fig. 7.
Atys hyalina, n. sp., p. 640, pl. xlviii. fig. 1.
Cadulus simillimus, n. sp., p. 20, pl. iii. fig. 6.
Capulus (*Amathina*) *tricarinatus* (Linne), p. 456.
Cerithium, sp.
„ (*Vertagus*) *articulatum*, Ad. and Reeve, p. 537.
Crossea striata, n. sp., p. 145, pl. ix. fig. 8.
Cyclostrema α, sp.
„ β, sp.
„ γ, sp.
Cylichna reticulata, n. sp., p. 667, pl. L. fig. 2.
„ *subreticulata*, n. sp., p. 668, pl. L. fig. 3.
Eulima α, sp.
„ β, sp.
„ γ, sp.
„ δ, sp.
Marginella α, sp.
„ β, sp.
Mathilda, sp.
Murex (*Chicoreus*) *cervicornis*, Lam., p. 154.
„ „ *monodon*, Sow., p. 154.
Murex (*Pteronotus*) *acanthopterus*, Lam., p. 155.
Natica, sp.
Odostomia corpulenta, n. sp., p. 484, pl. xxxi. fig. 3.
Oliva, sp.
Phasianella, sp.
Pleurotoma marmorata, Lam., p. 277.
Puncturella, n. sp., same as that of Sept. 7, Sept. 8, and also Station 186.
Rissoa (*Alvania*) *trajectûs*, n. sp., p. 596, pl. xliv. fig. 6.
„ β, sp.
„ γ, sp.
Rissoina triangularis, n. sp., p. 618, pl. xlvi. fig. 7.
Scalaria (*Cirsotrema*) *dentiscalpium*, n. sp., p. 143, pl. ix. fig. 3.
Scaliola arenosa, A. Ad., p. 623, pl. xlvi. fig. 11.
„ *bella*, A. Ad., p. 623.
„ *caledonica*, Crosse, p. 624.
Strombus (*Gallinula*) *campbellii*, Gray, p. 418.
Trochus (*Monodonta*) *labio*, Linne, p. 53.
„ (*Solariella*), sp.
„ (*Ziziphinus*) *similaris*, Reeve, p. 55.
Utriculus amphizostus, n. sp., p. 652, pl. xlviii. fig. 11.
„ *planospira* (A. Ad.), p. 648.
„ γ, sp.
„ δ, sp.
Voluta, sp.

Station 188. September 10, 1874. Lat. 9° 59′ S., long. 139° 42′ E. West of Cape York, and off the south-west point of Papua. 28 fathoms. Green mud.

Actæon flammeus (Gmel.), p. 626.
Adeorbis, sp.
Ancilla (*Dipsaccus*) *cingulata* (Sow.), p. 231.
Cassis (*Semicassis*) *pila*, Reeve, p. 407.
Cithna (?) sp.
Clathurella (*Daphnella*) *aulacoessa*, n. sp., p. 367, pl. xxiii. fig. 9.
Conus (*Hermes*) *croceus* (?), E. A. Sm., p. 388.
„ (*Leptoconus*) *lizardensis*, Crosse, p. 386.
Cyclostrema α, sp.
„ β, sp.
Dentalium javanum, Sow., p. 12.
„ *longitrorsum*, Reeve, p. 9.
Eulima martinii, A. Ad., p. 505.
Marginella, sp.
Murex (*Chicoreus*) *cervicornis*, Lam., p. 154.
„ (*Tribulus*) *acanthostephes*, n. sp., p. 149, pl. x. fig. 2.
Nassa (*Niotha*) *gemmulata* (Lam.), p. 176.
Nassaria sinensis, Sow., p. 403.
Natica atypha, n. sp., p. 438, pl. xxvii. fig. 2.
Odostomia scopulorum (?), n. sp., p. 485, pl. xxxi. fig. 5.
„ (*Turbonilla*) *dipsycha*, n. sp., p. 494, pl. xxxii. fig. 8.
„ „ *rhabdoïdes*, n. sp., p. 492, pl. xxxii. fig. 5.
„ α, sp.
„ γ, sp.
„ δ, sp.
Pleurotoma (*Drillia*) *laterculata*, Sowerby, p. 303, pl. xviii. fig. 5.
Ranella rana (Linne), p. 397.
Rissoa (*Alvania*) *trajectûs*, n. sp., p. 596, pl. xliv. fig. 6.
„ sp.
Rissoina miranda (A. Ad.), p. 616.
Skenea (?) α, sp.

Skenea (?) *β*, sp.
Terebra polygyrata, Desh., p. 379.
„ *triseriata*, Gray, p. 379.
Triforis rufula, n. sp., p. 566, pl. xlii. fig. 2.
Turritella cingulifera, Sow., p. 467.
Turritella fastigiata, Ad. and Reeve, p. 468.
Utriculus complanatus, n. sp., p. 650, pl. xlviii. fig. 9.
„ *planospira* ? (A. Ad.), p. 648.
„ (*Tornatina*) *aratus*, n. sp., p. 658, pl. xlix. fig. 6.
Xenophora helvacea, Phil., p. 463.

Station 190. September 12, 1874. Lat. 8° 56′ S., long. 136° 5′ E. Arafura Sea. 49 fathoms. Green mud.

Conus (*Leptoconus*) *lizardensis*, Crosse, p. 386.
„ „ *trigonus* (?), Reeve, p. 387.
Natica rufa (Born), p. 433.
Pleurotoma speciosa, Reeve, p. 278.
Ranella rana (Linne), p. 397.
Voluta (*Scaphella*) *turneri*, Gray, p. 256.

September 18, 1874. Arrou Island, south-west of Papua.

Cerithium (*Vertagus*) *articulatum*, Ad. and Reeve, p. 537.
„ „ *kochi*, Phil., p. 537.
Mitra (*Cancilla*) *interlirata*, Reeve, p. 248.
„ (*Costellaria*) *sculptilis*, Reeve, 251.
Nassa (*Niotha*) *sordida*, A. Ad., p. 178.
Oliva (*Galeola*) *picta*, Reeve, p. 224.
Phos roseatus, Hinds, p. 217.
„ *senticosus* (Linne), p. 218.
Ranella margaritula, Desh., p. 396.
Strombus, sp.
Trochus (*Ziziphinus*) *arruensis*, n. sp., p. 57, pl. vi. fig. 5.

Station 191. September 23, 1874. Lat. 5° 41′ S., long. 134° 4′ 30″ E. Off Arrou Island, south-west of Papua. 800 fathoms. Green mud. Bottom temperature 39°·5 F.

Natica (*Amauropsis*) *apora*, n. sp., p. 454, pl. xxvii. fig. 11.
Pleurotoma (*Spirotropis*) *brachytona*, n. sp., p. 324, pl. xviii. fig. 3.
Pleurotoma (*Typhlomangelia*) *paupera*, n. sp., p. 317, pl. xxv. fig. 3.
Scaphander mundus, n. sp., p. 643, pl. xlviii. fig. 2.

Station 192. September 26, 1874. Lat. 5° 49′ 15″ S., long. 132° 14′ 15″ E. Ke Islands, west of Papua. 140 fathoms. Blue mud.

Cassis, n. sp.
Natica insularum, n. sp., p. 440, pl. xxviii. fig. 2.
Oniscia cithara, n. sp., p. 410, pl. xxxiv. fig. 6.

Station 194 to 194A. September 29, 1874. Lat. 4° 34′ S., long. 129° 57′ 30″ E. 200 fathoms. Volcanic mud.

Murex (*Haustellum*), sp., p. 153.

October 6, 1874. Amboina. 15 to 25 fathoms.

Aporrhais cancellata (Lam.), p. 413.
Bittium amboinense, n. sp., p. 544, pl. xl. fig. 5.
„ *diplax*, n. sp., p. 555, pl. xxxviii. fig. 4.
Cerithium (*Vertagus*) *kochi*, Phil., p. 537.
Cyclostrema, sp.
Cylichna (?) *labiata*, n. sp., p. 669, pl. l. fig. 4.
Fasciolaria (*Latirus*) *contempta* (A. Ad.), p. 245.
Murex (*Pseudomurex*) *pauper*, n. sp., p. 159, pl. x. fig. 8.
„ (*Tribulus*) *aduncospinosus* (Beck), p. 146.
Nassa (*Niotha*) *ravida*, A. Ad., p. 177.
Nassaria amboinensis, n. sp., p. 404, pl. xiv. fig. 11.
Oliva rufula, Duclos, p. 223.
„ (*Galeola*) *picta*, Reeve, p. 224.
Ranella rana (Linne), p. 397.
Strombus (*Gallinula*) *succinctus*, Linne, p. 419.
Turritella cingulifera, Sow., p. 467.
Utriculus (*Tornatina*) *amboinensis*, n. sp., p. 659, pl. xlix. fig. 7.

Station 201. October 26, 1874. Lat. 7° 3′ N., long. 121° 48′ E. Philippines. 82 fathoms. Stones, gravel.

Trochus (*Margarita*) *pachychiles*, n. sp., p. 87, pl. v. fig. 11.
„ (*Ziziphinus*) *stephanephorus*, n. sp., p. 58, pl. xvii. fig. 1.
Trochus (*Ziziphinus*) *transenna*, n. sp., p. 62, pl. vi. fig. 3.

Station 203. October 31, 1874. Lat. 11° 6′ N., long. 123° 9′ E. Philippines. 20 fathoms. Mud.

Cassis (*Semicassis*) *pila*, Reeve, p. 407.
Cocculina angulata, n. sp., p. 30, pl. iv. fig. 2.
Murex (*Tribulus*) *tenuispina*, Lam., p. 148.
Nassa (*Zeuxis*) *canaliculata*, Lam., p. 181.
Pleurotoma (*Drillia*) *latisinuata*, E. A. Sm., p. 304, pl. xviii. fig. 6.
Pleurotoma, sp.
Pyrula ternatana (Gmel.), p. 212.
Ranella rana (Linne), p. 397.
Strombus (*Gallinula*) *vittatus*, Linne, p. 420.
Terebra (*Myurella*) *cælata*, Adams and Reeve, p. 380.
Trochus (*Gibbula*), sp.

Station 204 A and B. November 2, 1874. Lat. 12° 43′–46′ N., long. 122° 9′–10′ E. Off Tablas Island, Philippines. 100 to 115 fathoms. Green mud.

Cassis (*Bezoardica*) *wyvillei*, n. sp., p. 408, pl. xiv. fig. 13.
Fusus niphonicus, E. A. Sm., p. 194.
Pleurotoma (*Surcula*) *deshaysii*, Doûmet, p. 284.
Ranella fijiensis, n. sp., p. 397, pl. xxxiv. fig. 7.
Terebra (*Myurella*) *mamillata*, n. sp., p. 381, pl. xvi. fig. 1.
Xenophora pallidula (Reeve), p. 464, pl. xxviii. fig. 6.

Station 205. November 13, 1874. Lat. 16° 42′ N., long. 119° 22′ E. Philippines. 1050 fathoms. Blue mud. Bottom temperature 37°.

Chiton belknapi, Dall.
Pleurotoma phymatias, n. sp., p. 283, pl. xxvi. fig. 2.

Off Hong Kong. 10 fathoms.

Pleurotoma (*Surcula*) *tuberculata*, Gray, p. 285.

Station 208. January 17, 1875. Lat. 11° 37′ N., long. 123° 31′ E. Philippines. 18 fathoms. Blue mud.

Fasciolaria trapezium (Linne), p. 241.
Latirus, n. sp.
Murex (*Phyllonotus*) *endivia*, Lam., p. 157.
„ (*Tribulus*) *nigrospinosus*, Reeve, p. 147.
Nassa (*Zeuxis*) *algida*, Reeve, p. 180.
Nassaria suturalis, A. Ad., var. *bitubercularis*, A. Ad., p. 404.
Natica (*Mamma*) *draparnaudi*, Recluz, p. 452.
Phos roseatus, Hinds, p. 217.
Pleurotoma marmorata, Lam., p. 277.
Ranella margaritula, Desh., p. 396.
Rapana bulbosa, Solander, p. 173.
Separatista chemnitzii, A. Ad., p. 428.
Strombus (*Gallinula*) *columba*, Lam., p. 419.
Terebellum punctatum, Chem., p. 421.
Trochus (*Euchelus*) *atratus* (Gmel.), p. 52.
„ (*Margarita*) *pachychiles*, n. sp., p. 87, pl. v. fig. 11.
Xenophora solarioïdes (Reeve), p. 464.

Station 210. January 25, 1875. Lat. 9° 26′ N., long. 123° 45′ E. Philippines. 375 fathoms. Blue mud. Bottom temperature 54°·1.

Fusus (*Metula*) *philippinarum*, n. sp., p. 210, pl. xii. fig. 1.
Nassa (*Aciculina*) *babylonica*, n. sp., p. 185, pl. xi. fig. 8.
Natica philippinensis, n. sp., p. 442, pl. xxvii. fig. 1.
Phos bathyketes, n. sp., p. 219, pl. xi. fig. 2.
Pleurotoma (*Genota*) *atractoïdes*, n sp., p. 301, pl. xx. fig. 8.

Station 212. January 30, 1875. Lat. 6° 54′ N., long. 122° 18′ E. Off Malanipa Island, Basilan Strait, Philippines. 10, 14, and 20 fathoms. Sand.

Cæcum, sp.
Conus (*Leptoconus*) *nisus*, Chem., p. 386.
„ (*Lithoconus*) *eburneus*, Hwass, p. 384.
„ „ *quercinus*, Hwass, p. 385.
Eulima oxytata, n. sp., p. 512, pl. xxxv. fig. 7.
Fusus colus, Linne, p. 191.
Mitra (*Pusia*) *cineracea*, Reeve, p. 251.
Mucronalia xanthias, n. sp., p. 523, pl. xxxvii. fig. 8.
Natica seychellium, Wats., p. 434.
Philine orientalis, A. Ad., p. 672.
Phos roseatus, Hinds, p. 217.
„ (*Strongylocera*) *angulatus*, Sow., p. 222.
Solarium (*Architectonica*) *perspectivum* (Linne), p. 135.
Strombus (*Gallinula*) *columba*, Lam., p. 419.
Terebra (*Myurella*) *undulata*, Gray, p. 381.
Triton (*Distorsio*) *cancellinus* (de Roissy), p. 395.
„ (*Gutturnium*) *gracilis*, Reeve, p. 394.
Turritella (*Eglisia*) *tricarinata*, Ad. and Reeve, p. 479.
Xenophora solarioides (Reeve), p. 464.

January 1875. Zebu, Philippines. Shore.

Conus (*Cylindrella*) *sulcatus*, Hwass, p. 384.
Murex (*Phyllonotus*) *endivia*, Lam., p. 157.

February 1, 1875. Samboangan. 10 fathoms.

Cypræa cylindrica, Born, p. 422.
Haliotis varia, Linne, p. 677.
Nerita chamæleon, Linne, p. 679.
Trochus (*Chrysostoma*) *paradoxus* (Born), p. 92.
Voluta (*Vespertilio*) *vespertilio*, Linne, var. *pellis-serpentis*, Lam., p. 254.

Station 214. February 10, 1875. Lat. 4° 33′ N., long. 127° 6′ E. South-east of Philippines. 500 fathoms. Blue mud. Bottom temperature 41°·8 Fahr.

Pleurotoma (*Surcula*) *dissimilis*, n. sp., p. 298, pl. xxvi. fig. 3.
Scaphander niveus, n. sp., p. 644, pl. xlviii. fig. 3.
Trochus (*Margarita*) *streptophorus*, n. sp., p. 91, pl. xvii. fig. 4.

Station 218. March 1, 1875. Lat. 2° 33′ S., long. 144° 4′ E. North of Papua. 1070 fathoms. Blue mud. Bottom temperature 36°·4 Fahr.

Aporrhais, n. sp.
Dentalium acutissimum, n. sp., p. 8, pl. i. fig. 8.

March 7, 1875. Off Admiralty Islands, north-east of Papua. 16 to 25 fathoms.

Capulus japonicus, A. Ad., p. 456.
Cassis (*Casmaria*) *turgida*, Reeve, p. 409.
Harpa nobilis, Lam., p. 232.
Strombus (*Gallinula*) *variabilis*, Swains., p. 420.
Turritella admirabilis, n. sp., p. 472, pl. xxix. fig. 5.
Vitularia crenifera, Montrouz., p. 173.

Station 219. March 10, 1875. Lat. 1° 54′ S., long. 146° 39′ 40″ E. Admiralty Islands, north-east of Papua, outside of Nares Harbour. 150 fathoms. Coral mud.

Phos naucratoris, n. sp., p. 218, pl. xiii. fig. 11.

March 3–10, 1875. Tracey Island, Nares Harbour, Admiralty Islands.

Cerithium (*Vertagus*) *martinianum*, Pfr., p. 538.

March 1875. Wild Island, Admiralty Islands. North of Papua.

Dolium perdix (Linne), p. 412.

Trochus (*Chrysostoma*) *paradoxus*, Born, p. 92.

Station 232. May 12, 1875. Lat. 35° 11′ N., long. 139° 28′ E. Off Inosima, Japan, "Hyalonema ground." 345 fathoms. Green mud. Bottom temperature 41°·1 Fahr.

Bembix æola, n. gen. and sp., p. 95, pl. vii. fig. 13.

Pleurotoma (*Genota*) *engonia*, n. sp., p. 300, pl. xx. fig. 7.

May 14, 1875. Oosima, Japan.

Acmæa dorsuosa (?), Gould, p. 29, pl. iv. fig. 1.
,, *saccharina*, Linne, p. 29.
Bittium oosimense, n. sp., p. 548, pl. xxxix. fig. 1.
,, sp.
Cerithium carbonarium, Phil., p. 531.
Columbella versicolor, Sow., p. 234.
Litorina (*Hamus*) *granularis*, Gray, p. 576.
Purpura (*Thalessa*) *alveolata*, Reeve, p. 172.
Trochus (*Chlorostoma*) *xanthostigma*, A. Ad., p. 70.
,, (*Monodonta*) *labio*, Lam., p. 53.

Stations 233 and 233A. May 17–19, 1875. Lat. 34° 39′ to 34° 38′ N., long. 135° 14′ to 135° 1′ E. Kobi, Japan. 8 to 50 fathoms. Mud and sand.[1]

Cancellaria spengleriana, Desh., p. 273.
Capulus (*Amathina*) *tricarinatus* (Linne), p. 456.
Crepidula aculeata (Gmel.), p. 458.
Dentalium yokohamense, n. sp.,[2] p. 11, pl. ii. fig. 1.
Lamellaria, sp.
Nassa (*Niotha*) *siquijorensis*, A. Ad., p. 177.
Nassa (*Zeuxis*) *crenulata*, Brug., p. 182.
Philine, sp.
Pleurobranchus, sp.
Pleurotoma (*Typhlomangelia*) *pyrrha*, n. sp., p. 316, pl. xxv. fig. 6.
Terebra bathyraphe, E. A. Sm., p. 377, pl. xiv. fig. 9.

Station 233B. May 26, 1875. Lat. 34° 18′ N., long. 133° 35′ E. Japan. 15 fathoms. Blue mud.

Nassa (*Zeuxis*) *crenulata*, Brug., p. 182.

Philine, sp.

Station 233C. May 28, 1875. Lat. 34° 18′ N., long. 133° 21′ E. Japan. 12 fathoms. Blue mud. Bottom temperature 59°·9 Fahr.

Nassa (*Zeuxis*) *crenulata*, Brug., p. 182.

Philine, sp.

[1] Some of the specimens belonging to this set were marked differently from the rest, thus, "8 to 14 fathoms Yokohama."

[2] This shell was expressly marked "8 to 14 fathoms, Yokohama."

Station 235. June 4, 1875. Lat. 34° 7′ N., long. 138° E. Japan. 565 fathoms. Green mud. Bottom temperature 38°·1 Fahr.

Bembix œola, n. gen. and sp., p. 95, pl. vii. fig. 13.
Echinella (?) *tectiformis*, n. sp., p. 578, pl. xliii. fig. 1.
Turbo transenna, n. sp., p. 125, pl. vi. fig. 12.

Station 237. June 17, 1875. Lat. 34° 37′ N., long. 140° 32′ E. Off Yedo. 1875 fathoms. Blue mud. Bottom temperature 35°·3 Fahr.

Pleurotoma, sp.

Station 241. June 23, 1875. Lat. 35° 41′ N., long. 157° 42′ E. North Pacific. 2300 fathoms. Red clay. Bottom temperature 35°·1 Fahr.

Chiton alveolus, Sars.

Station 246. July 2, 1875. Lat. 36° 10′ N., long. 178° E. Mid Pacific, east of Japan. 2050 fathoms. Globigerina ooze. Bottom temperature 35°·1 Fahr.

Basilissa lampra, n. gen. and sp., p. 97, pl. vii. fig. 5.
Cithna margaritifera, n. sp., p. 580, pl. xliii. fig. 3.
Dentalium acutissimum, n. sp., p. 8, pl. i. fig. 8.
,, *keras*, n. sp., p. 3, pl. i. fig. 4.
Pleurotoma (*Surcula*) *rotundata*, n. sp., p. 290, pl. xxi. fig. 6.

July 1875. Reefs off Honolulu, Sandwich Islands. 40 fathoms.

Alaba (*Stiliferina*) *goniochila*, A. Ad., p. 569, pl. xlii. fig. 4.
Amphisphyra, sp.
Atys, sp.
Barleeia imbricata, n. sp., p. 584, pl. xliii. fig. 2.
Bittium leucocephalum, n. sp., p. 558, pl. xxxviii. fig. 7.
,, *perparvulum*, n. sp., p. 554, pl. xxxviii. fig. 3.
Cæcum crystallinum, de Folin, n. sp., p. 687, pl. (*Cæcidæ*) iii. figs. 23, 24.
,, *sepimentum*, de Folin, p. 684.
,, n. sp., p. 684, pl. (*Cæcidæ*) ii. fig. 2.
Cerithiopsis turrigera, n. sp., p. 529, pl. xxxviii. fig. 2.
,, β, sp.
,, γ, sp.
Columbella (*Zafra*) *troglodytes*, Souv., p. 240.
Cyclostrema, sp.
Cylichna α, sp.
,, β, sp.
Cypræa (*Trivia*) *pellucidula*, Gask., p. 428.
Eulima akanthyllis, n. sp., p. 512, pl. xxxv. fig. 8.
,, α, sp.
,, β, sp.
Lachesis (?) sp.
Marginella α, not *Marginella marei*, Crosse, though like. The spire is not concealed as it is in that species.
,, β.
Odostomia kymatodes, n. sp., p. 486, pl. xxxi. fig. 8.
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Utriculus (*Tornatina*) *α*, sp.
,, ,, β, sp.

July or August 1875. Honolulu, Sandwich Islands. Reefs.

Conus (*Puncticulis*) *pulicarius*, Hwass, p. 383.

August 17, 1875. Hilo, Sandwich Islands. Shore.

Litorina pintado (Wood), p. 575.

September 28 (?) 1875. Tahiti Harbour, near the reefs. 20 fathoms.

Alaba (*Stiliferina*) *striata*, n. sp., p. 569, pl. xlii. fig. 6.
„ sp.
Cæcum sepimentum, de Folin, var. *arcuata*, de Folin, p. 684.
„ sp.
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Cypræa teres, Gmel., p. 426.
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Scissurella coronata, n. sp., p. 114, pl. viii. fig. 4.
„ sp.
Turbo petholatus, Linne, p. 124.
Utriculus (*Tornatina*), sp., the same as *Utriculus α* of July 1875, p. 719.

November 18, 1875. Valparaiso. Shore.

Fissurella crassa, Lam., p. 32.
„ *maxima*, Sow., p. 33.
Litorina peruviana (Lam.), p. 574.
Trochus (*Chlorostoma*) *ater*, Less., p. 70.

Station 299. December 14, 1875. Lat. 33° 31′ S., long. 74° 43′ W. The Pacific, west of Valparaiso. 2160 fathoms. Blue mud. Bottom temperature 35°·2 Fahr.

Dentalium keras, n. sp., p. 3, pl. i. fig. 4.

Station 304. December 31, 1875. Lat. 46° 53′ 15″ S., long. 75° 12′ W. 45 fathoms. Green sand.

Trochus (*Margarita*) *illotus*, n. sp., p. 86, pl. xvii. fig. 3.

Station 305A. January 1, 1876. Lat. 47° 48′ 30″ S., long. 74° 47′ W. North-western Patagonia. 125 fathoms. Blue mud.

Fusus (*Neptunea*) *scalaris*, n. sp., p. 203, pl. xii. fig. 5.

Station 308. January 5, 1876. Lat. 50° 8′ 30″ S., long. 74° 41′ W. Western Patagonia. 175 fathoms. Blue mud.

Triton (*Lagena*) *magellanicus* (Chem.), p. 395.
Trophon acanthodes, n. sp., p. 166, pl. x. fig. 6.
Trophon liratus, Couth., p. 165.

Station 311. January 11, 1876. Lat. 52° 45′ 30″ S., long. 73° 46′ W. Western Patagonia. 245 fathoms. Blue mud. Bottom temperature 46° Fahr.

Trophon acanthodes, n. sp., p. 166, pl. x. fig. 6.

Station 312. January 13, 1876. Lat. 53° 37′ 30″ S., long. 70° 56′ W. Port Famine, Straits of Magellan. 10 to 15 fathoms. Blue mud.

Puncturella noachina (Linne), var. *galeata*, Gould, p. 42.

Station 313. January 20, 1876. Lat. 52° 20′ S., long. 67° 39′ W. Cape Virgins, South-east Patagonia. 55 fathoms. Sand. Bottom temperature 47°·8.

Triforis, sp.

Station 315. January 26–28, 1876. Lat. 51° 40′ S., long. 57° 50′ W. Port Stanley and Port William, Falkland Islands. "The *Voluta* from the trawl 5 fathoms; the others mostly from the kelp in from 5 to 12 fathoms. Sand and gravel."

Calyptræa pileus (Lam.), p. 461.
,, sp.
Crepidula dilatata, Lam., p. 459.
Fissurella picta (Gmel.), p. 33.
Fusus (*Euthria*) *fuscatus* (Brug.), p. 209.
Lamellaria α.
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Trochus (*Photinula*) *tæniatus* (Sow.), p. 69.
,, ,, *cærulescens* (King), p. 68.
,, ,, *expansus* (Sow.), p. 69.
Trophon geversianus (Pallas), p. 164.
,, *liratus*, Couth., p. 165.
Voluta (*Cymbiola*) *ancilla*, Solander, p. 255.

Station 316. February 3, 1876. Lat. 51° 32′ S., long. 58° 6′ W. Port Louis, Falkland Islands. 4 to 5 fathoms. Mud.

Fusus (*Euthria*) *fuscatus* (Brug.), p. 209.
Trochus (*Photinula*) *tæniatus* (Sow.), p. 69.

"From the stomach of a duck at the Falklands."

Trochus (*Photinula*) *expansus* (Sow.), p. 69.

Station 320. February 14, 1876. Lat. 37° 17′ S., long. 53° 52′ W. South-east of the river Plate. 600 fathoms. Green sand. Bottom temperature 37°·2 Fahr.

Pleurotoma (*Surcula*) *goniodes*, n. sp., p. 291, pl. xx. fig. 4.
Trochus (*Margarita*), sp.

Station 321. February 25, 1876. Lat. 35° 2′ S., long. 55° 15′ W. Off Monte Video. 13 fathoms. Mud.

Bullia (*Buccinanops*) *gradata* (Desh.), p. 190.
Pleurotoma (*Surcula*) *oxytropis*, Sow., var. *albicarinata*, p. 285.
Voluta (*Zidona*) *angulata*, Swains., p. 254.

Station 323. February 28, 1876. Lat. 35° 39′ S., long. 50° 47′ W. Off the mouth of the river Plate. 1900 fathoms. Blue mud. Bottom temperature 33°·1 Fahr.

Basilissa simplex, n. gen. [and sp., p. 98, pl. vii. fig. 6.
Dentalium amphialum, n. sp., p. 3, pl. i. fig. 3.
Trochus, sp.

Station 325. March 2, 1876. Lat. 36° 44′ S., long. 46° 16′ W. South Atlantic. 2650 fathoms. Blue mud. Bottom temperature 32°·7 Fahr.

Stylifer brychius, n. sp., p. 524, pl. xxxvii. fig. 9.

Station 335. March 16, 1876. Lat. 32° 24′ S., long. 13° 5′ W. South-east Atlantic. 1425 fathoms. Pteropod ooze. Bottom temperature 37° Fahr.

Clathurella cala, n. sp., p. 361, pl. xxvi. fig. 11.

March or April 1876. Ascension Island. Shore.

Purpura (*Stramonita*) *fasciata*, Reeve, p. 172.

Station 344. April 3, 1876. Lat. 7° 54′ 20″ S., long. 14° 28′ 20″ W. Ascension Island. 420 fathoms. Volcanic sand.

Basilissa oxytropis, n. gen. and sp., p. 104, pl. vii. fig. 9.
Bittium, sp.
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Cylichna cylindracea (Pennant), p. 663.
Dentalium entalis, Linne, var. *agile*, Sars, p. 6.
Eulima chyta, n. sp., p. 516, pl. xxxvi. fig. 5.
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„ „ *triangularis*, n. sp., p. 611, pl. xlvi. fig. 2.
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PLATE I.

PLATE I.

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Fig. 1. *Dentalium capillosum*, Jeffr. 1

a. The shell, natural size.
b. The apex of one specimen, curiously fissured.
c. The natural size of the same.
d. The enlarged representation of the sculpture towards the mouth.
e. The young shell.
f. The natural size of the same.
g, *h*. The enlarged representation of the sculpture at different points.

Fig. 2. *Dentalium ægeum*, n. sp. 2

a. The shell, natural size.
b. The apex enlarged, showing the fissure.
c, *d*, *e*. *f*. The enlarged representation of the sculpture at different points.

Fig. 3. *Dentalium amphialum*, n. sp. 3

a. The shell, natural size.
b. The enlarged representation of the fissure.
c, *d*. The enlarged representation of the sculpture at two different points.

Fig. 4. *Dentalium keras*, n. sp. 3

a. The shell, natural size.
b. The enlarged representation of the fissure.
c. The enlarged representation of the sculpture at two different points.

Fig. 5. *Dentalium diarrhox*, n. sp. 4

a. The shell, natural size.
b. The enlarged representation of the sculpture.
c. A young specimen.
d. The enlarged representation of the fissure.

Fig. 6. *Dentalium leptoskeles*, n. sp. 7

a. The shell, natural size.
b, *c*. The enlarged representation of the sculpture at different points.

Fig. 7. *Dentalium circumcinctum*, n. sp. 7

a. The shell, natural size.
b, *c*, *d*. The enlarged representation of the sculpture at different points.
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Fig. 8. *Dentalium acutissimum*, n. sp. 8

a. The shell restored, natural size.
b, *c*. The enlarged representation of the sculpture at different points.
d. The enlarged representation of the fissure.

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a. The shell, enlarged.
b. The enlarged section, showing the compression between the convex and concave curve of the shell.
c. The enlarged representation of the sculpture near the mouth.
d. The natural size of the shell.

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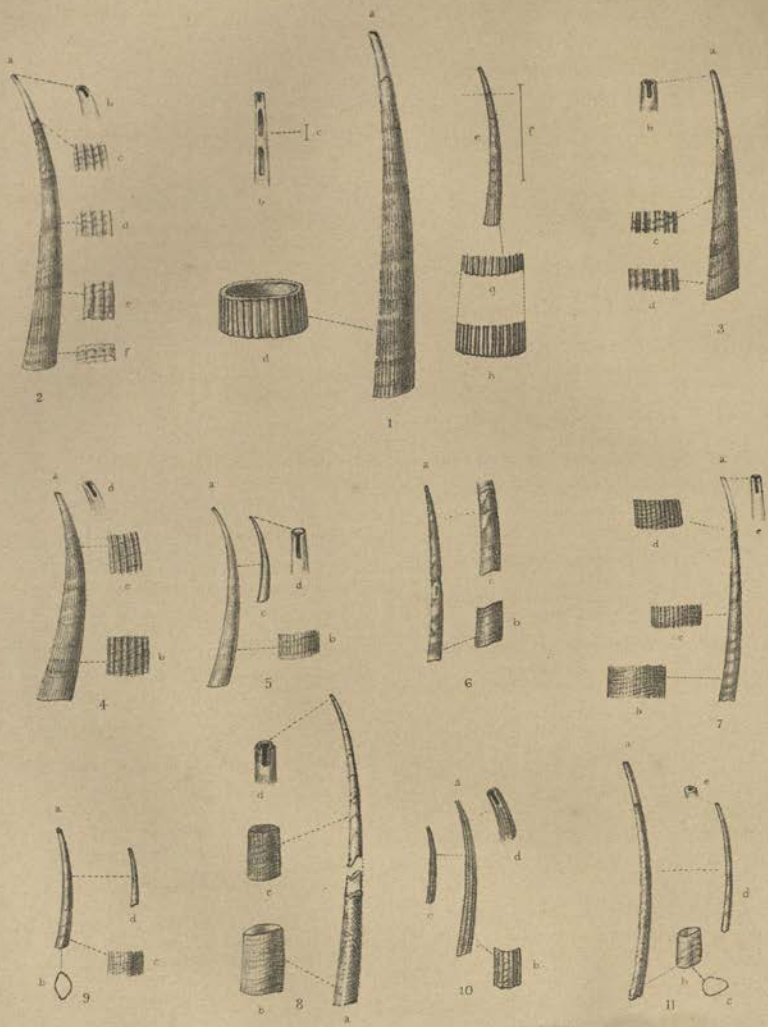
a. The shell, enlarged.
b. The enlarged representation of the sculpture.
c. The natural size of the shell.
d. The enlarged representation of the fissure.

Fig. 11. *Dentalium didymum*, n. sp. 11

a. The shell, enlarged.
b. The enlarged representation of the sculpture.
c. The transverse section of the shell near the mouth.
d. The enlarged figure of the apex, showing the small round orifice and thick walls of the shell.



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Hanhart imp.

DENTALIUM.

PLATE II.

PLATE II.

PAGE

Fig. 1. *Dentalium yokohamense*, n. sp. 11

a. The shell, natural size.
b, *c*. The enlarged representation of the sculpture at different points.

Fig. 2. *Dentalium ensiculus*, Jeffr. 12

a. The shell, enlarged.
b. The transverse section of the same near the mouth.
c. The natural size of the shell.
d. The enlarged representation of the apex and fissure.

Fig. 3. *Dentalium tornatum*, n. sp. 13

a. The shell, enlarged.
b, *e*. The enlarged representation of the sculpture at different points.
c. The natural size of the shell.
d. The enlarged representation of the tip, showing the small projecting pipe in prolongation of the bore.

Fig. 4. *Siphodentalium platamodes*, n. sp. 13

a. The natural size of a young specimen of the shell.
b. The same, enlarged.
c. The transverse section of the same at the mouth.
d. The enlarged representation of the sculpture.
e. The natural size of an older specimen.
f. The enlarged representation of the same.

Fig. 5. *Siphodentalium tytthum*, n. sp. 14

a. The enlarged representation of the shell.
b. The natural size of the same.
c. The enlarged representation of the apex.
d, *e*. The transverse sections of the shell toward the apex and mouth.

Fig. 6. *Siphodentalium pusillum*, n. sp. 14

a. The enlarged figure of the shell.
b. The natural size of the same.

Fig. 7. *Siphodentalium dichelum*, n. sp. 15

a. The natural size of the shell.
b. The enlarged representation of the shell.
c. The transverse section of the shell in the middle.
d. The enlarged representation of the apex.
e. The enlarged representation of the mouth.

Fig. 8. *Siphodentalium tetraschistum*, n. sp. 15

a. The enlarged representation of the shell.
b. The natural size of the same.
c. The enlarged representation of the apex.
d. The enlarged representation of the mouth.

Fig. 9. *Siphodentalium prionotum*, n. sp. 16

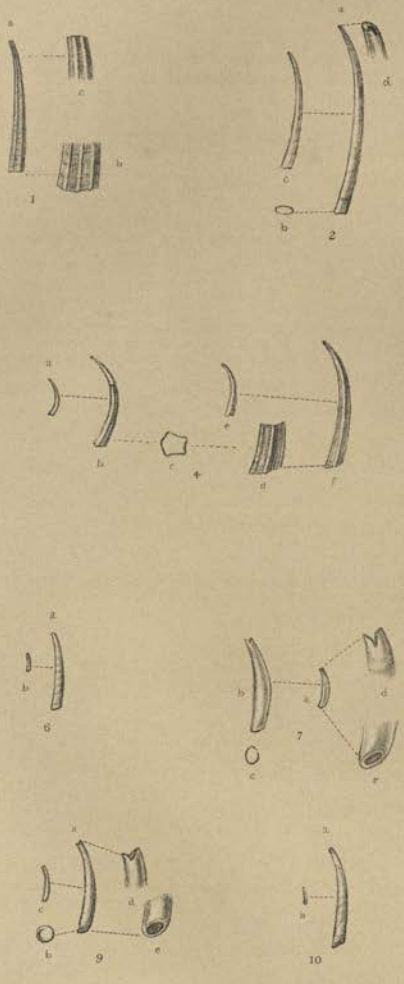
a. The enlarged representation of the shell.
b. The transverse section of the same towards the mouth.
c. The natural size of the shell.
d. The enlarged representation of the apex.
e. The enlarged representation of the mouth.

Fig. 10. *Siphodentalium eboracense*, n. sp. 17

a. The enlarged representation of the shell.
b. The natural size of the same.

Fig. 11. *Siphodentalium honoluluense*, n. sp. 17

a. The enlarged representation of the shell.
b, *d*. The transverse sections of the same near the apex and near the mouth.
c. The natural size of the shell.



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DENTALIUM, SIPHODENTALIUM.

PLATE III.

PLATE III.

PAGE

Fig. 1. *Cadulus colubrideus*, n. sp. 18

a. The shell, natural size.
b. The shell, enlarged.
c. The transverse section at the mouth.
d. The transverse section at the apex.

Fig. 2. *Cadulus vulpidens*, n. sp. 18

a. The shell, natural size.
b. The shell, enlarged.
c. The transverse section at the mouth.
d. The transverse section at the apex.

Fig. 3. *Cadulus rastridens*, n. sp. 19

a. The shell, natural size.
b. The shell, enlarged.
c. The transverse section at the apex.
d. The transverse section at the mouth.

Fig. 4. *Cadulus sauridens*, n. sp. 19

a. The shell, natural size.
b. The shell, enlarged.
c. The transverse section at the mouth.
d. The transverse section at the apex.

Fig. 5. *Cadulus gracilis*, Jeffr. 20

a. The shell, natural size.
b. The shell, enlarged.
c. The transverse section at the mouth.
d. The transverse section at the apex.

Fig. 6. *Cadulus simillimus*, n. sp. 20

a. The shell, natural size.
b. The shell, enlarged.
c. The transverse section at the mouth.
d. The transverse section at the apex.

Fig. 7. *Cadulus curtus*, n. sp., var. *congruens*, ... 21

a. The shell, natural size.
b. The shell, enlarged.
c. The transverse section at the mouth.
d. The transverse section at the apex.

Fig. 7. *Cadulus curtus*, n. sp. 21

e. The shell, natural size.
f. The shell, enlarged.
g. The transverse section at the mouth.
h. The transverse section at the apex.

Fig. 8. *Cadulus obesus*, n. sp. 22

a. The shell, natural size.
b. The shell, enlarged.
c. The transverse section at the mouth.
d. The transverse section at the apex.
e. A view of the pierced diaphragm near the apex.

Fig. 9. *Cadulus tumidosus*, Jeffr. 22

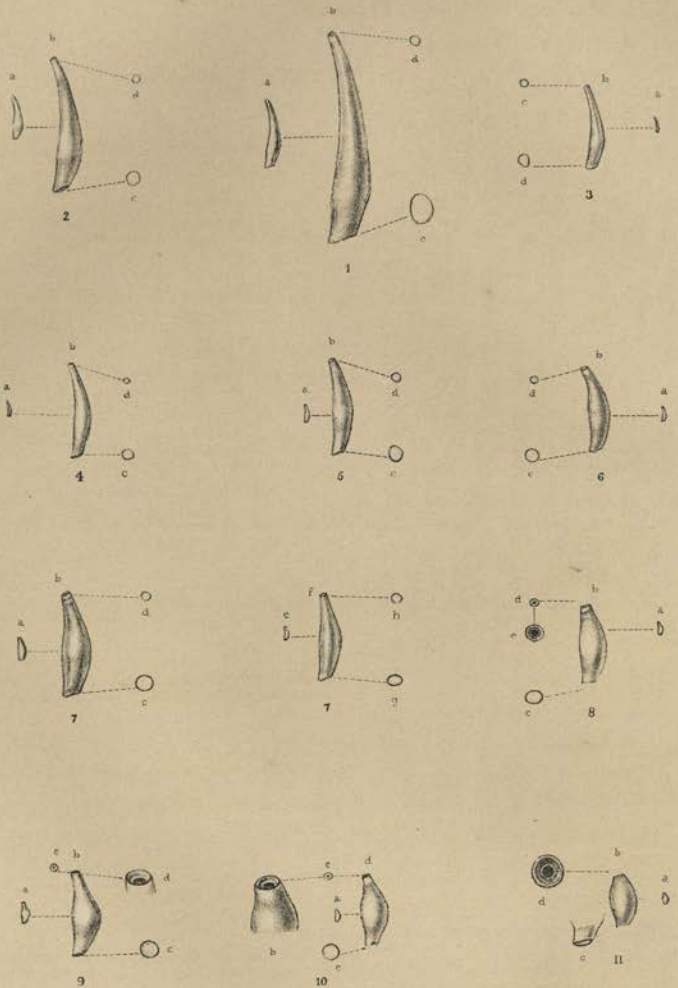
a. The shell, natural size.
b. The shell, enlarged.
c. The transverse section near the mouth.
d. The apex, more enlarged, showing the circular shelf.
e. The transverse section near the apex.

Fig. 10. *Cadulus exiguus*, n. sp. 23

a. The shell, natural size.
b. The upper part enlarged, showing the circular shelf.
c. The transverse section near the mouth.
d. The shell, enlarged.
e. The transverse section near the apex.

Fig. 11. *Cadulus ampullaceus*, n. sp. 23

a. The shell, natural size.
b. The shell, enlarged.
c. The lower end of the shell, more enlarged.
d. The apex, still more enlarged, showing the circular shelf contracting the opening.



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CADULUS.

PLATE IV.

PLATE IV.

PAGE

Fig. 1. *Acmæa dorsuosa*, Gould 29

a. The shell in side profile, the front to the left. | *b.* The shell in face, the front above.

Fig. 2. *Cocculina angulata*, n. sp. 30

a. The shell, natural size.
b. The side profile enlarged, the front to the left.
c. The shell enlarged, seen from above, the front to the left.
d. The sculpture, magnified 40 diameters.

Fig. 3. *Zeidora naufraga*, n. sp. 36

a. The shell, natural size.
b. The side profile enlarged.
c. The shell seen from above.
d. The shell in face.
e. The sculpture, magnified 20 diameters.

Fig. 4. *Puncturella* (*Cranopsis*) *asturiana*, Fisch. 45

a. The shell, natural size.
b. The side view enlarged, the front to the left.
c. The sculpture, magnified 15 diameters.

Fig. 5. *Puncturella* (*Cranopsis*) *granulata*, Seg. (copied from Seguenza) . . 46

The shell enlarged, the front to the right.

Fig. 6. *Puncturella agger*, n. sp. 40

a. The shell, natural size.
b. The shell enlarged, seen in profile.
c. The shell seen from above.
d. The shell seen in face.
e. The sculpture, magnified 50 diameters.

Fig. 7. *Puncturella brychia*, n. sp. 41

a. The shell, natural size.
b. The shell enlarged, seen in profile.
c. The shell seen from above.
d. The shell seen in face.
e. The sculpture, magnified 30 diameters.

Fig. 8. *Puncturella oxia*, n. sp. 44

a. The shell, natural size.
b. The shell enlarged, seen in profile.
c. The shell seen from above.
d. The shell seen in face.
e. The sculpture, magnified 50 diameters.

Fig. 9. *Puncturella sportella*, n. sp. 45

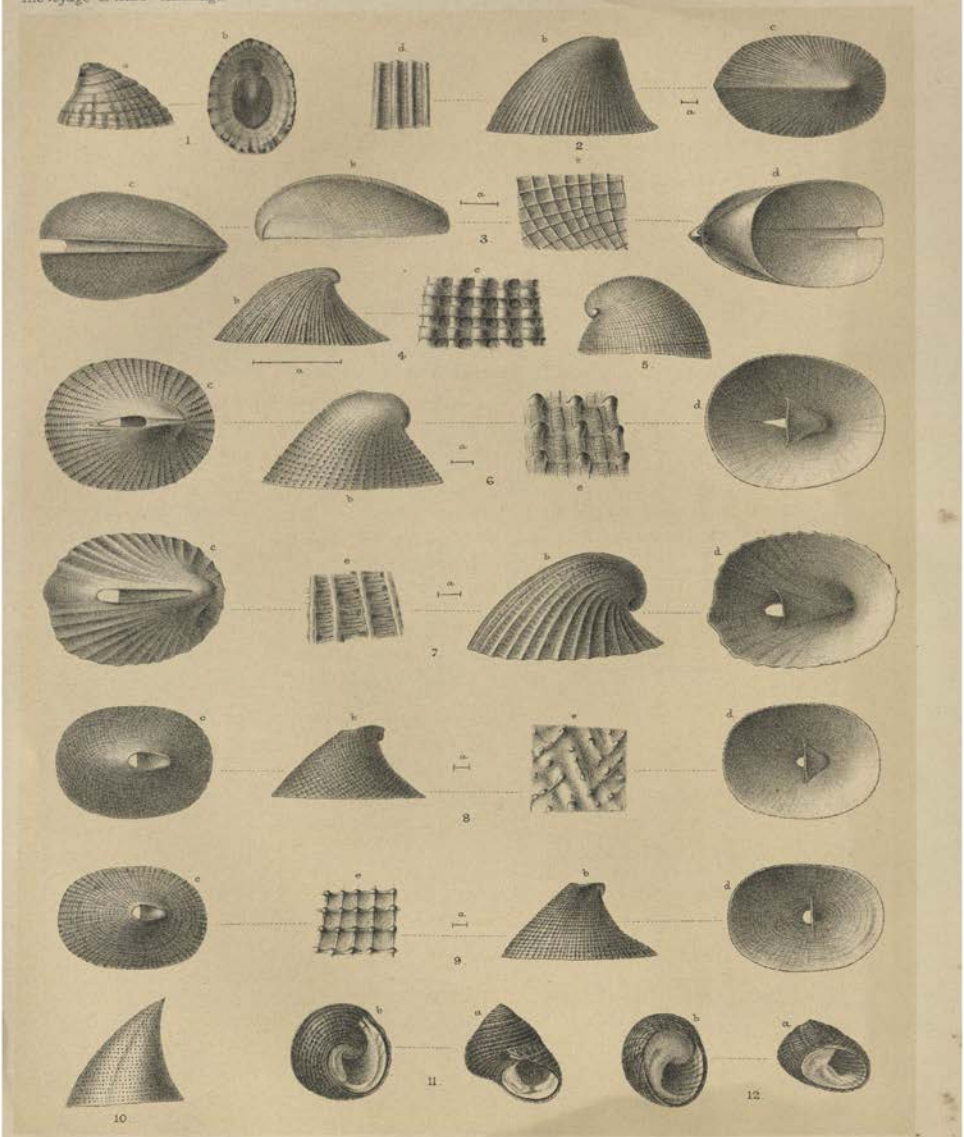
a. The shell, natural size.
b. The shell enlarged, seen in profile.
c. The shell seen from above.
d. The shell seen in face.
e. The sculpture, enlarged 50 diameters.

Fig. 10. *Puncturella* (*Fissurisepta*) *rostrata*, Seg. (copied from Seguenza) . . 48

The shell, much enlarged, seen in profile.

Fig. 11. *Trochus* (*Trochocochlea*) *fuligineus*, A. Adams 67

Fig. 12. *Trochus* (*Diloma*) *porcifer*, A. Adams 67



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ACMÆA. COCCULINA. ZEIDORA. PUNCTURELLA. TROCHUS.

PLATE V.

PLATE V.

PAGE

Fig. 1. *Trochus* (*Margarita*) *rhina*, n. sp. 80

a. The natural size.
b. The sculpture, enlarged.
c. The shell, enlarged.
d. The shell, back view (the exceptionally fine specimen referred to at p. 81).
e. The same, natural size.
f. A high and narrow form.
g. Natural size of the same.

Fig. 2. *Trochus* (*Margarita*) *scintillans*, n. sp. 91

a. The natural size.
b. The shell, enlarged.

Fig. 3. *Trochus* (*Margarita*) *dnophorus*, n. sp. 90

a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.

Fig. 4. *Trochus* (*Margarita*) *rhysus*, n. sp. 83

a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.

Fig. 5. *Trochus* (*Margarita*) *infundibulum*, n. sp. 84

a. The natural size.
b. The shell, enlarged.

Fig. 6. *Trochus* (*Margarita*) *charopus*, n. sp. 78

a. The operculum.
b. The shell, natural size, var. *cæruleus*, Wats.
c. The shell, natural size.

Fig. 7. *Trochus* (*Margarita*) *brychius*, n. sp. 77

a. The shell, natural size.
b. The sculpture, enlarged.

Fig. 8. *Trochus* (*Margarita*) *clavatus*, n. sp. 82

a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.

Fig. 9. *Trochus* (*Margarita*) *pompholugotus*, n. sp. 79

a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.

Fig. 10. *Trochus* (*Margarita*) *ægleës*, n. sp. 81

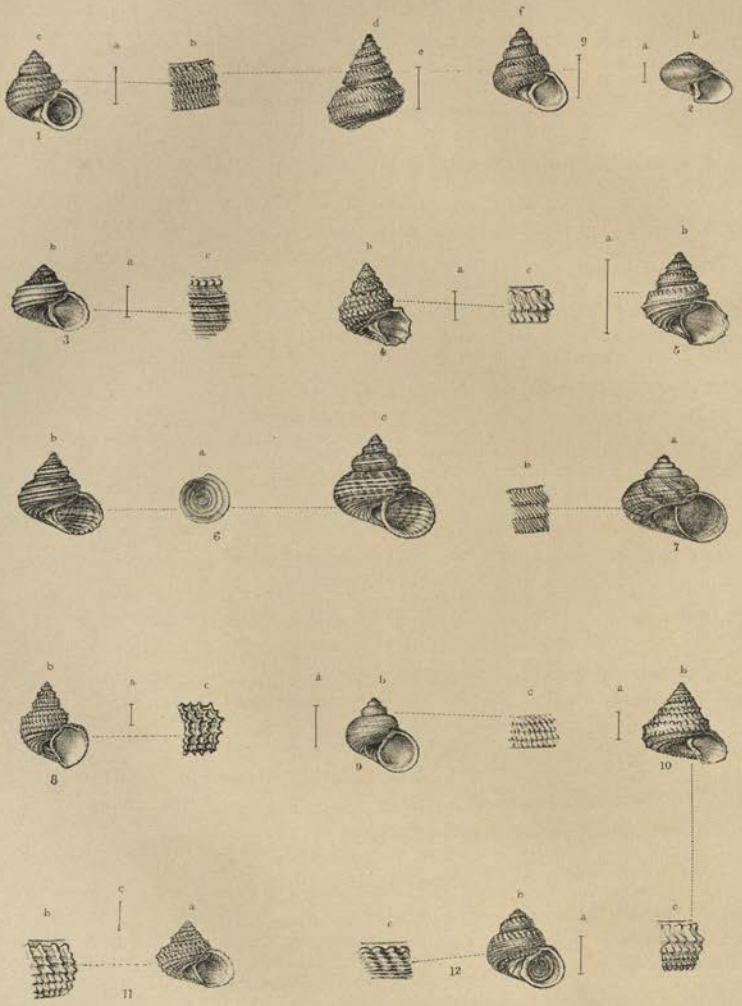
a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.

Fig. 11. *Trochus* (*Margarita*) *pachychiles*, n. sp. 87

a. The shell, enlarged.
b. The sculpture, enlarged.
c. The natural size.

Fig. 12. *Trochus* (*Margarita*) *azorensis*, n. sp. 88

a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.



TROCHUS.

PLATE VI.

PLATE VI.

PAGE

Fig. 1. *Turbo* (*Collonia*) *indutus*, n. sp. 128

a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.

Fig. 2. *Trochus* (*Ziziphinus*) *stirophorus*, n. sp. 60

a. The natural size.
b. The shell, enlarged.
c. The sculpture of the apex, greatly magnified.

Fig. 2.* Sculpture of the apex of *Trochus* (*Ziziphinus*) *occidentalis*, Migh. .
Greatly magnified, for comparison.

Fig. 3. *Trochus* (*Ziziphinus*) *transenna*, n. sp. 62

a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.

Fig. 4. *Trochus* (*Ziziphinus*) *tiara*, n. sp. 60

a. The natural size.
b. The shell, enlarged.

Fig. 5. *Trochus* (*Ziziphinus*) *arruensis*, n. sp. 57

a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.

Fig. 6. *Trochus* (*Gibbula*) *glyptus*, n. sp. 75

a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.

Fig. 7. *Trochus* (*Gibbula*) *zonatus*, Wood. 76

a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.

Fig. 8. *Trochus* (*Solariella*) *albugo*, n. sp. 75

a. The natural size.
b. The shell, enlarged.
c. The base of shell, enlarged.

Fig. 9. *Trochus* (*Solariella*) *lamprus*, n. sp. 74

a. The natural size.
b. The shell, enlarged.
c. The base, enlarged.

Fig. 10. *Trochus* (*Solariella*) *philippinensis*, n. sp. 73

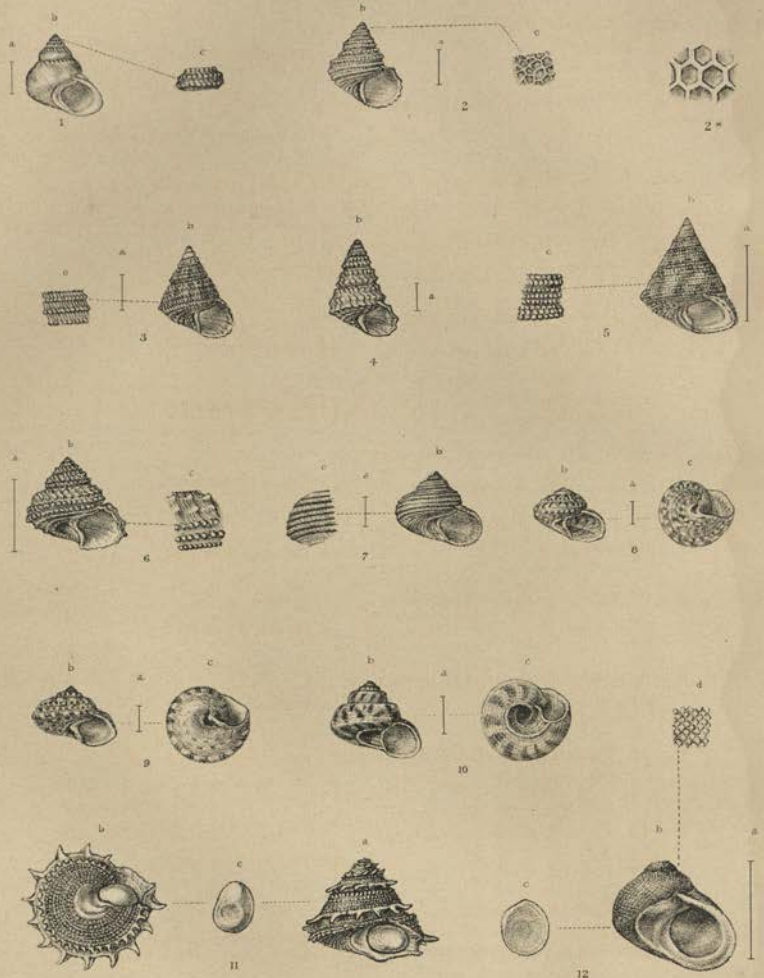
a. The natural size.
b. The shell, enlarged.
c. The base, enlarged.

Fig. 11. *Turbo* (*Calcar*) *henicus*, n. sp. 130

a. The shell.
b. The base of the shell.
c. The operculum, outer face.

Fig. 12. *Turbo transenna*, n. sp. 125

a. The natural size.
b. The shell, very slightly enlarged.
c. The operculum, outer face.
d. The sculpture, enlarged.



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TROCHUS, TURBO.

PLATE VII.

PLATE VII.

PAGE

Fig. 1. *Seguenzia monocingulata*, Seg., var. *lineata*, Wats. . . . 106

a. The natural size.
b. The base, enlarged.
c. The shell, enlarged.
d. Enlarged view of the outline of the lip-edge, and the sculpture of the shell.

Fig. 2. *Seguenzia carinata*, n. sp. 108

a. The natural size.
b. The shell, enlarged.
c. The base, enlarged.

Fig. 3. *Seguenzia ionica*, n. sp. 107

a. The natural size.
b. The shell, enlarged.
c. The base, enlarged.

Fig. 4. *Seguenzia trispinosa*, n. sp. 110

a. The natural size.
b. The base, enlarged.
c. The shell, enlarged.

Fig. 5. *Basilissa lampra*, n. sp. 97

a. The natural size.
b. The base, enlarged.
c. The shell, enlarged.

Fig. 6. *Basilissa simplex*, n. sp. 98

a. The natural size.
b. The shell, enlarged.

Fig. 7. *Basilissa munda*, n. sp. 99

a. The natural size.
b. The shell, enlarged.

Fig. 8. *Basilissa alta*, n. sp. 100

a. The natural size.
b. The shell, enlarged.
c. The sculpture of the base, enlarged.
d. The sculpture of the side of the whorls, enlarged.
e. Var. *oxytoma*, Wats., enlarged.
f. The natural size of the same.

Fig. 9. *Basilissa oxytropis*, n. sp. 104

a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.
d. The base of the shell, enlarged.

Fig. 10. *Basilissa superba*, n. sp. 101

a. and a^1. The natural breadth and height.
b. The base, enlarged.
c. The sculpture of the base.
d. The sculpture of the side.
e. The shell, enlarged.

Fig. 11. *Basilissa costulata*, n. sp. 103

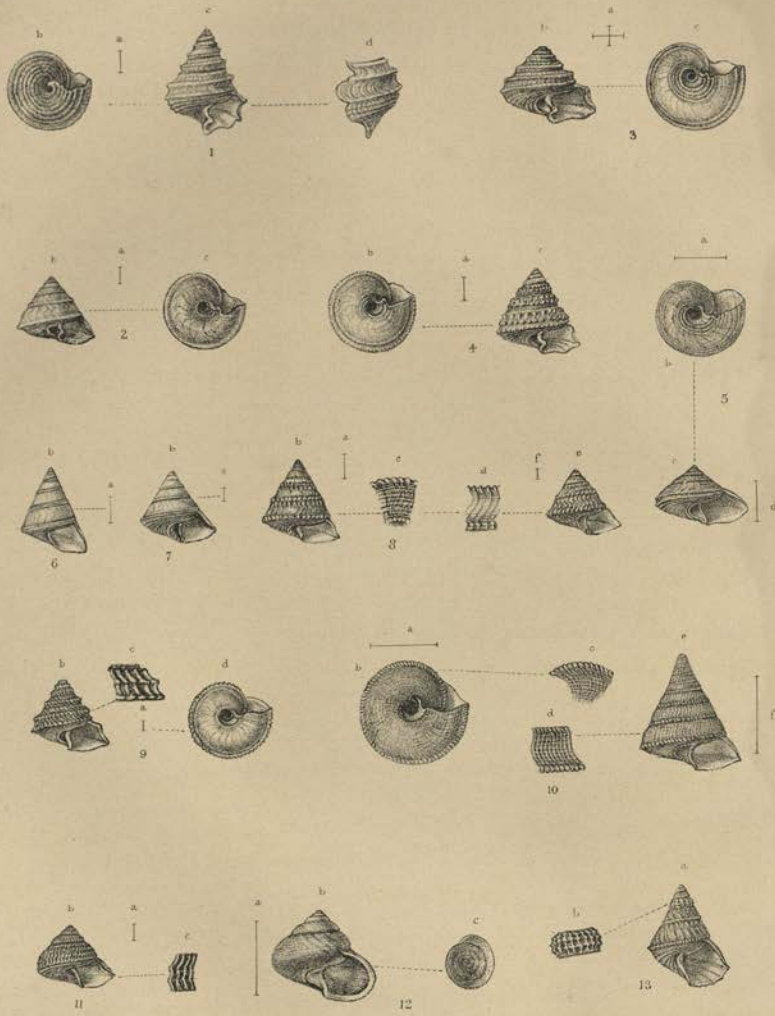
a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.

Fig. 12. *Gaza dædala*, n. sp. 93

a. The natural size.
b. The shell, enlarged.
c. The membranaceous operculum, outer face.

Fig. 13. *Bembyx æola*, n. sp. 95

a. The shell, natural size.
b. The sculpture of the upper whorls, enlarged.



SEGUENZIA, BASILISSA, GAZA, BEMBIX.

PLATE VIII.

PLATE VIII.

PAGE

Fig. 1. *Scissurella alta*, n. sp. 113

a. The natural size.
b. The shell, enlarged.
c. The base, enlarged.

Fig. 2. *Scissurella declinans*, n. sp. 115

a. The natural size.
b. The shell, enlarged.
c. The base, enlarged.
d. The sculpture, magnified 70 diameters.

Fig. 3. *Scissurella aëdonia*, n. sp. 114

a. The natural size.
b. The shell, enlarged.
c. The base, enlarged.
d. The sculpture, magnified 60 diameters.

Fig. 4. *Scissurella coronata*, n. sp. 114

a. The natural size.
b. The shell, enlarged.
c. The base, enlarged.
d. The sculpture, magnified 50 diameters.

Fig. 5. *Scissurella obliqua*, n. sp. 116

a. The natural size.
b. The shell, enlarged.
c. The base, enlarged.

Fig. 6. *Schismope carinata*, n. sp. 119

a. The natural size.
b. The shell, enlarged.
c. The base, enlarged.
d. The sculpture, magnified 60 diameters.

Fig. 7. *Schismope tabulata*, n. sp. 117

a. The natural size.
b. The shell, enlarged.
c. The base, enlarged.
d. The sculpture, magnified 70 diameters.

Fig. 8. *Schismope lacuniformis*, n. sp. 118

a. The natural size.
b. The shell, enlarged.
c. The base, enlarged.

Fig. 9. *Cyclostrema conicum*, n. sp. 122

a. The natural size.
b. The shell, enlarged.
c. The base, enlarged.

Fig. 10. *Cyclostrema excavatum*, n. sp. 121

a. The natural size.
b. The shell, enlarged.
c. The base, enlarged.

Fig. 11. *Cyclostrema sulcatum*, n. sp. 121

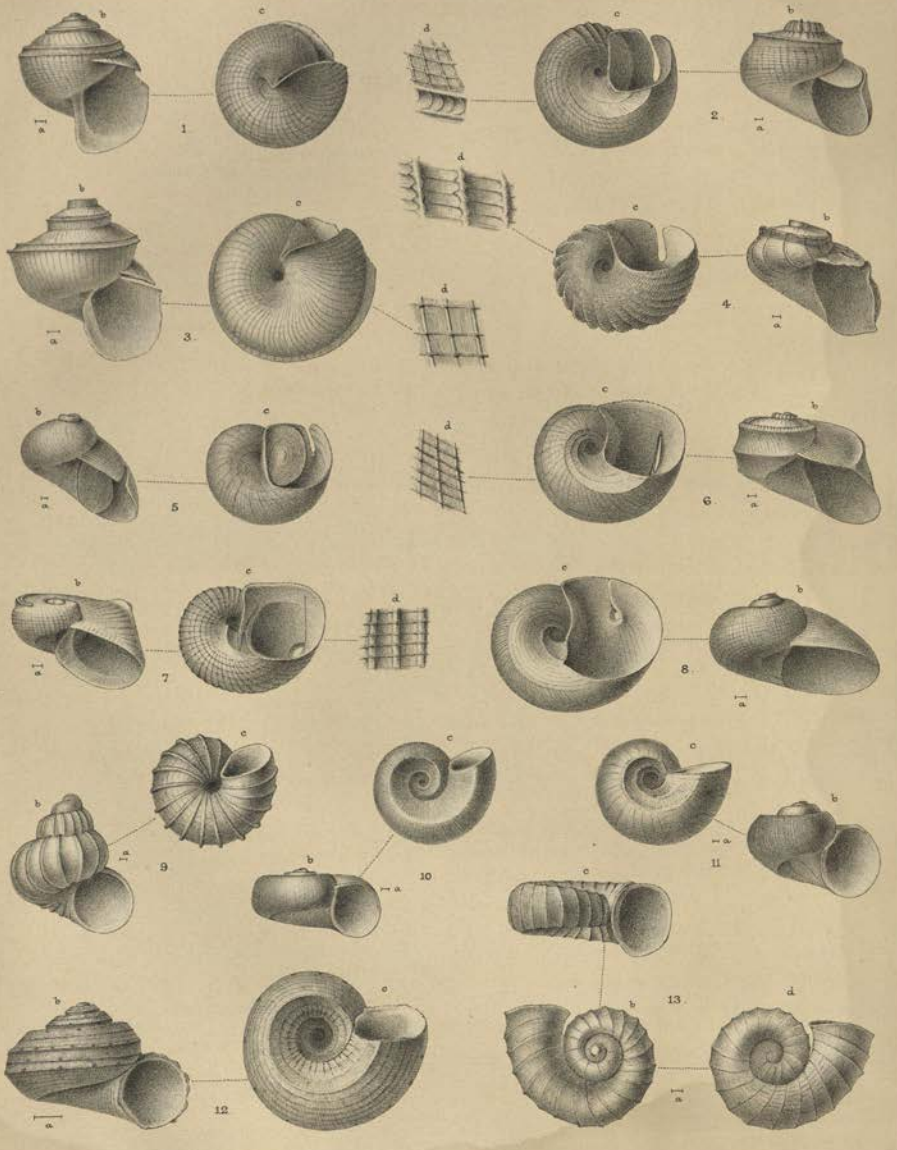
a. The natural size.
b. The shell, enlarged.
c. The base, enlarged.

Fig. 12. *Solarium* (*Torinia*) *rosulentum*, n. sp. 136

a. The natural size.
b. The shell, enlarged.
c. The base, enlarged.

Fig. 13. *Bifrontia pernambucensis*, n. sp. 137

a. The natural size.
b. The shell seen from above, enlarged
c. The shell seen in face, enlarged.
d. The base, enlarged.



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SCISSURELLA, SCHISMOPE,
CYCLOSTREMA, SOLARIUM, BIFRONTIA.

PLATE IX.

PLATE IX.

PAGE

Fig. 1. *Scalaria tortilis*, n. sp. 139

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 25 diameters.

Fig. 2. *Scalaria acus*, n. sp. 140

a. The natural size.
b. The apex, magnified 50 diameters.
c. The shell, enlarged.

Fig. 3. *Scalaria (Cirsotrema) dentiscalpium*, n. sp. 143

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 40 diameters.

Fig. 4. *Scalaria funiculata*, n. sp. 141

a. The natural size.
b. The sculpture, enlarged 40 diameters.
c. The shell, enlarged.

Fig. 5. *Scalaria philtata*, n. sp. 142

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 35 diameters.

Fig. 6. *Scalaria vermetiformis*, n. sp. 142

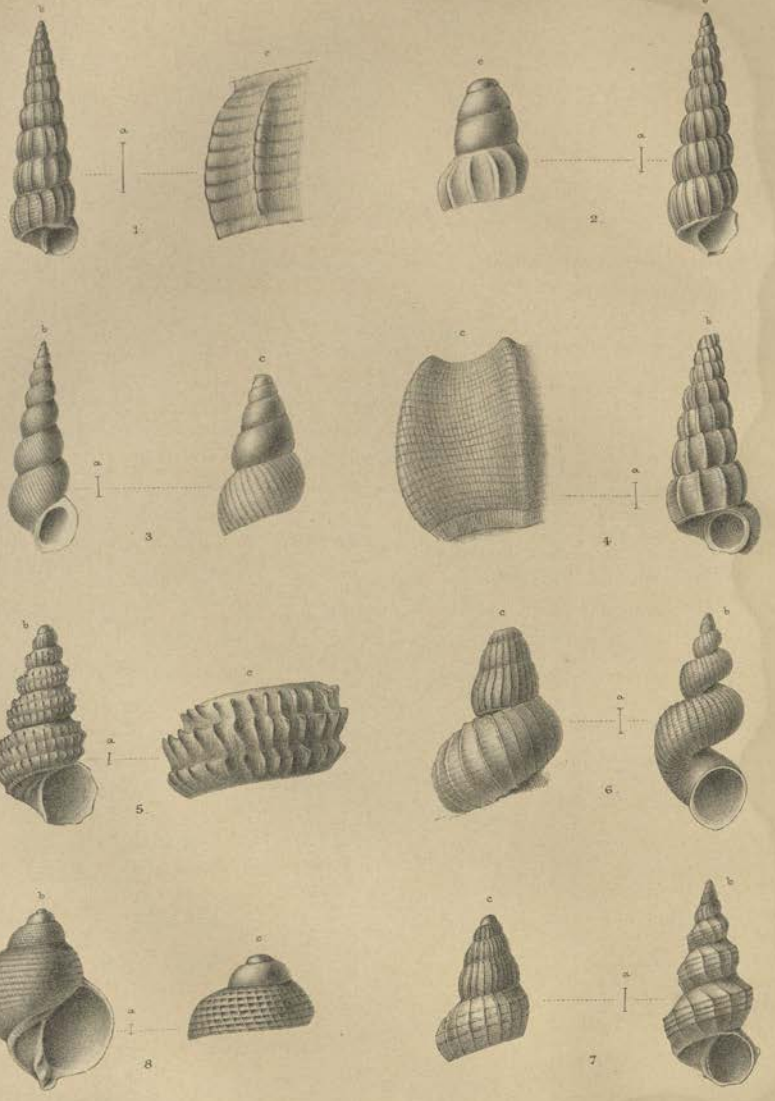
a. The natural size.
b. The apex, magnified 40 diameters.
c. The shell, enlarged.

Fig. 7. *Scalaria (Acirsa) pyrrhias*, n. sp. 145

a. The natural size.
b. The apex, magnified 30 diameters.
c. The shell, enlarged.

Fig. 8. *Crossea striata*, n sp. 145

a. The natural size.
b. The shell, enlarged.
c. The apex and sculpture of the shell, magnified 50 diameters.



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SCALARIA, CROSSEA.

PLATE X.

PLATE X.

PAGE

Fig. 1. *Murex (Tribulus) acanthodes*, n. sp. 151

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 20 diameters.

Fig. 2. *Murex (Tribulus) acanthostephes*, n. sp. 149

Fig. 3. *Murex (Pseudomurex) pholidotus*, n. sp. 158

a. The natural size.
b. The shell.

Fig. 4. *Typhis philippensis*, n. sp. 162

a. The natural size.
b. The shell, enlarged.

Fig. 5. *Murex (Pteronotus) cordismei*, n. sp. 156

a. The natural size.
b. The shell, enlarged.

Fig. 6. *Trophon acanthodes*, n. sp. 166

a. The shell, enlarged.
b. The natural size.

Fig. 7. *Trophon carduelis*, n. sp. 167

a. The natural size.
b. The shell, enlarged.
c. The operculum, enlarged.

Fig. 8. *Murex (Pseudomurex) pauper*, n. sp. 159

a. The natural size.
b. The shell, enlarged.

Fig. 9. *Trophon aculeatus*, n. sp. 169

a. The natural size.
b. The shell, enlarged.
c. The natural size of
d. The young shell, magnified 10 diameters.

Fig. 10. *Trophon declinans*, n. sp. 168

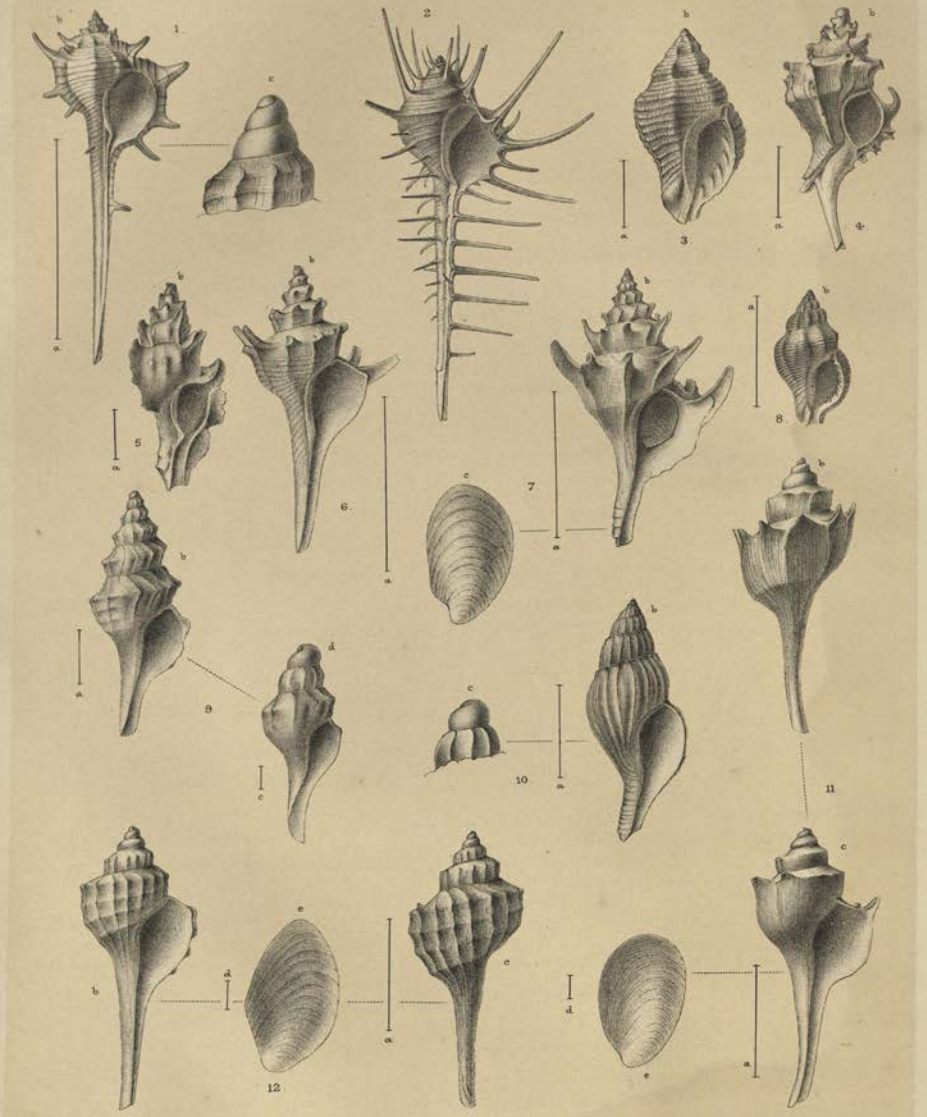
a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 15 diameters.

Fig. 11. *Trophon septus*, n. sp. 170

a. The natural size.
b, *c*. The shell, enlarged, back and front view.
d. The operculum, magnified 8 diameters.

Fig. 12. *Trophon scolopax*, n. sp. 171

a. The natural size.
b, *c*. The shell, enlarged, front and back view.
d. The operculum, magnified 6 diameters.



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MUREX, TYPHIS, TROPHON.

PLATE XI.

PLATE XI.

PAGE

Fig. 1. *Phos sculptilis*, Reeve 222

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 20 diameters.

Fig. 2. *Phos bathyketes*, n. sp. 219

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 12 diameters.

Fig. 3. *Nassa levukensis*, n. sp. 181

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 25 diameters.

Fig. 4. *Nassa psila*, n. sp. 179

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 20 diameters.

Fig. 5. *Nassa brychia*, n. sp. 189

a. The natural size.
b. The shell, enlarged.

Fig. 6. *Nassa agapeta*, n. sp. 174

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 25 diameters.

Fig. 7. *Nassa capillaris*, n. sp. 186

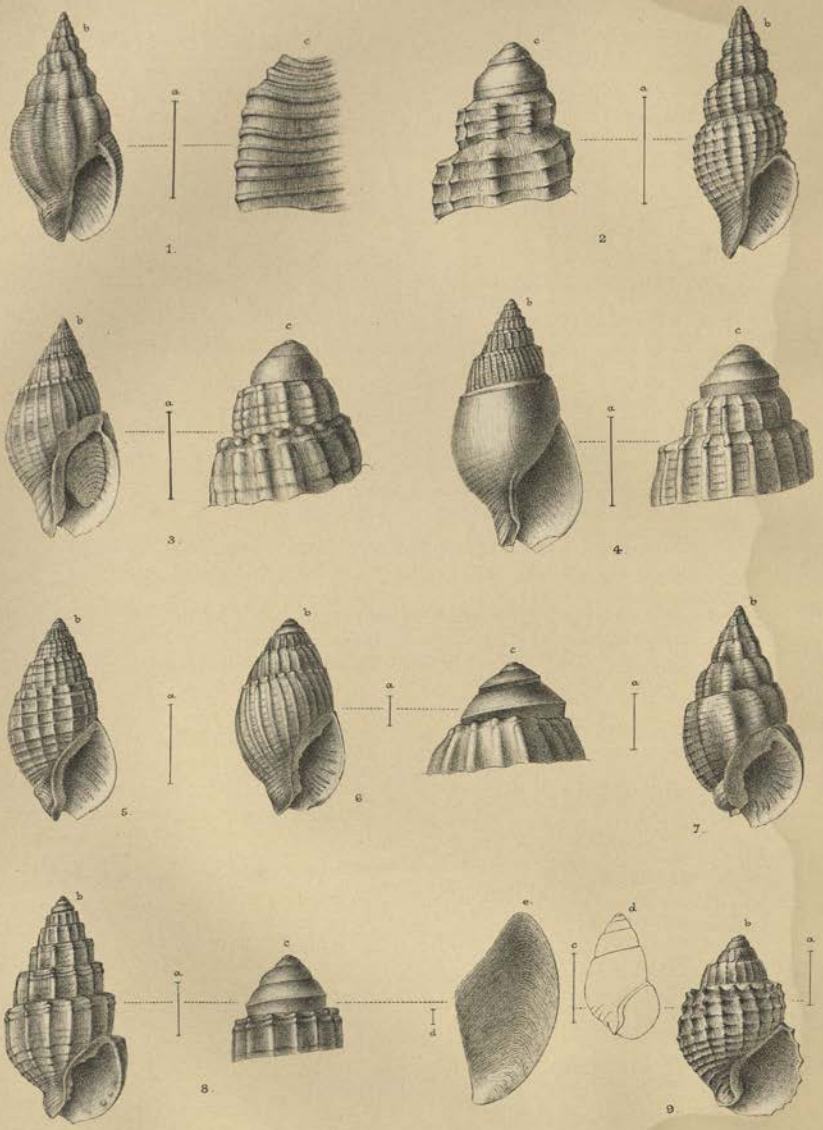
a. The natural size.
b. The shell, enlarged.

Fig. 8. *Nassa babylonica*, n. sp. 185

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 15 diameters.
d. The operculum, magnified 15 diameters.

Fig. 9. *Nassa ephamilla*, n. sp. 187

a. The natural size.
b. The shell, enlarged.
c. The natural size of
d. A variety.



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PHOS, NASSA.

PLATE XII.

PLATE XII.

PAGE

Fig. 1. *Fusus (Metula) philippinarum*, n. sp. 210

a. The natural size.
b. The shell, enlarged.
c. The operculum, magnified.
d. The apex, magnified.

Fig. 2. *Fusus (Sipho) pyrrhostoma*, n. sp. 208

a. The natural size.
b. The shell, enlarged.
c. The natural size of
d. The operculum, enlarged.

Fig. 3. *Fusus (Neptunea) calathiscus*, n. sp. 201

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 15 diameters.
d. The natural size of
e. The operculum, enlarged.

Fig. 4. *Fusus (Neptunea) setosus*, n. sp. 202

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 8 diameters.

Fig. 5. *Fusus (Neptunea) scalaris*, n. sp. 203

a. The natural size.
b. The shell, enlarged.

Fig. 6. *Fusus (Neptunea) edwardiensis*, n. sp. 204

a. The natural size.
b. The shell, enlarged.
c. The natural size of
d. A young shell, showing the apex, &c., enlarged.

Fig. 7. *Fusus (Neptunea) regulus*, n. sp. 204

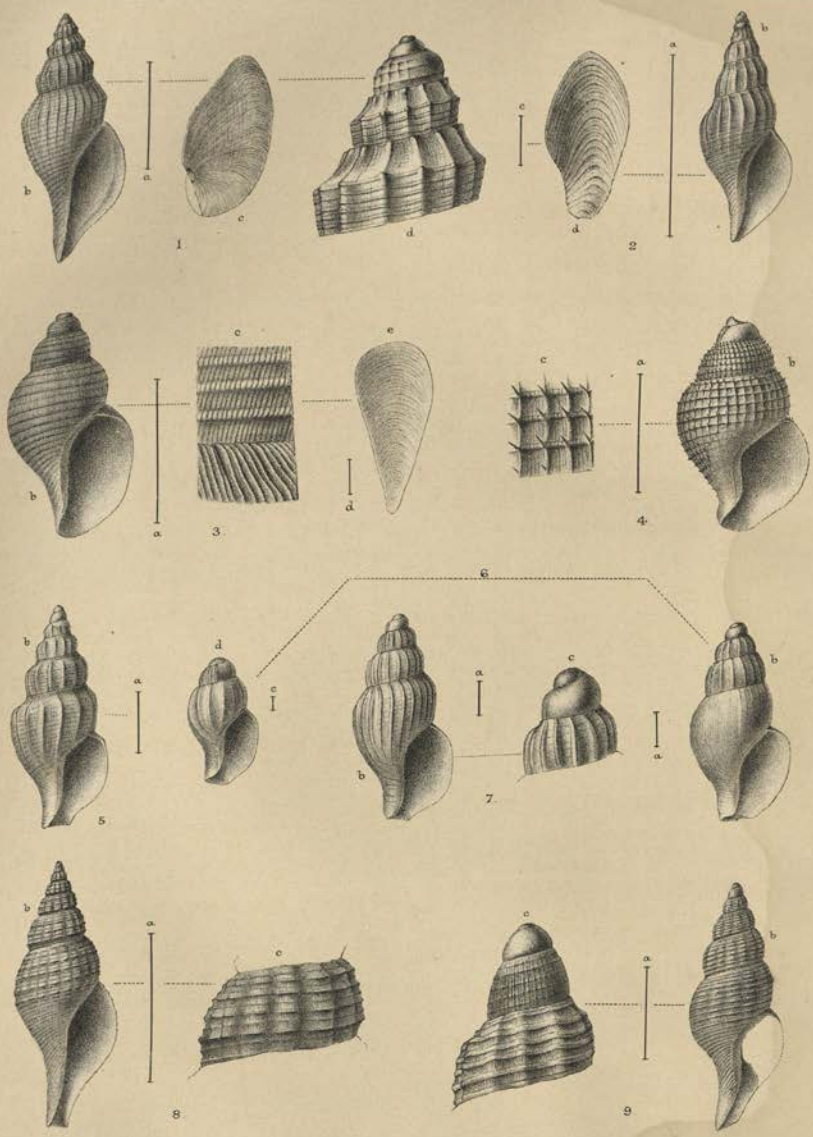
a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 15 diameters.

Fig. 8. *Fusus (Sipho) libratus*, n. sp. 206

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 5 diameters.

Fig. 9. *Fusus (Sipho) futile*, n. sp. 207

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 15 diameters.



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FUSUS.

PLATE XIII.

PLATE XIII.

PAGE

Fig. 1. *Fasciolaria armata*, A. Ad. 243

a. The shell. | *b*, *c.* The operculum, enlarged, inside and outside face.

Fig. 2. *Columbella* (*Pyrene*) *strix*, n. sp. 237

a. The natural size. | *c.* The natural size of
b. The shell, enlarged. | *d.* Var. *subacta*, Wats. The shell, enlarged.

Fig. 3. *Columbella* (*Pyrene*) *stricta*, n. sp. 238

a. The natural size. | *b.* The shell, enlarged.

Fig. 4. *Buccinum* (?) *aquilarum*, n. sp. 213

a. The natural size. | *c.* The sculpture, magnified 20 diameters.
b. The shell, enlarged.

Fig. 5. *Provocator pulcher*, n. sp. 260

Fig. 6. *Fasciolaria rutila*, n. sp. 242

a. The natural size. | *b.* The operculum.

Fig. 7. *Buccinum albozonatum*, n. sp. 212

a. The natural size. | *d.* The natural size of
b. The shell, enlarged. | *e.* The operculum, enlarged.
c. The sculpture, magnified 20 diameters.

Fig. 8. *Oliva* (*Olivella*) *vitilia*, n. sp. 227

a. The natural size. | *b.* The shell, enlarged.

Fig. 9. *Oliva* (*Olivella*) *amblia*, n. sp. 226

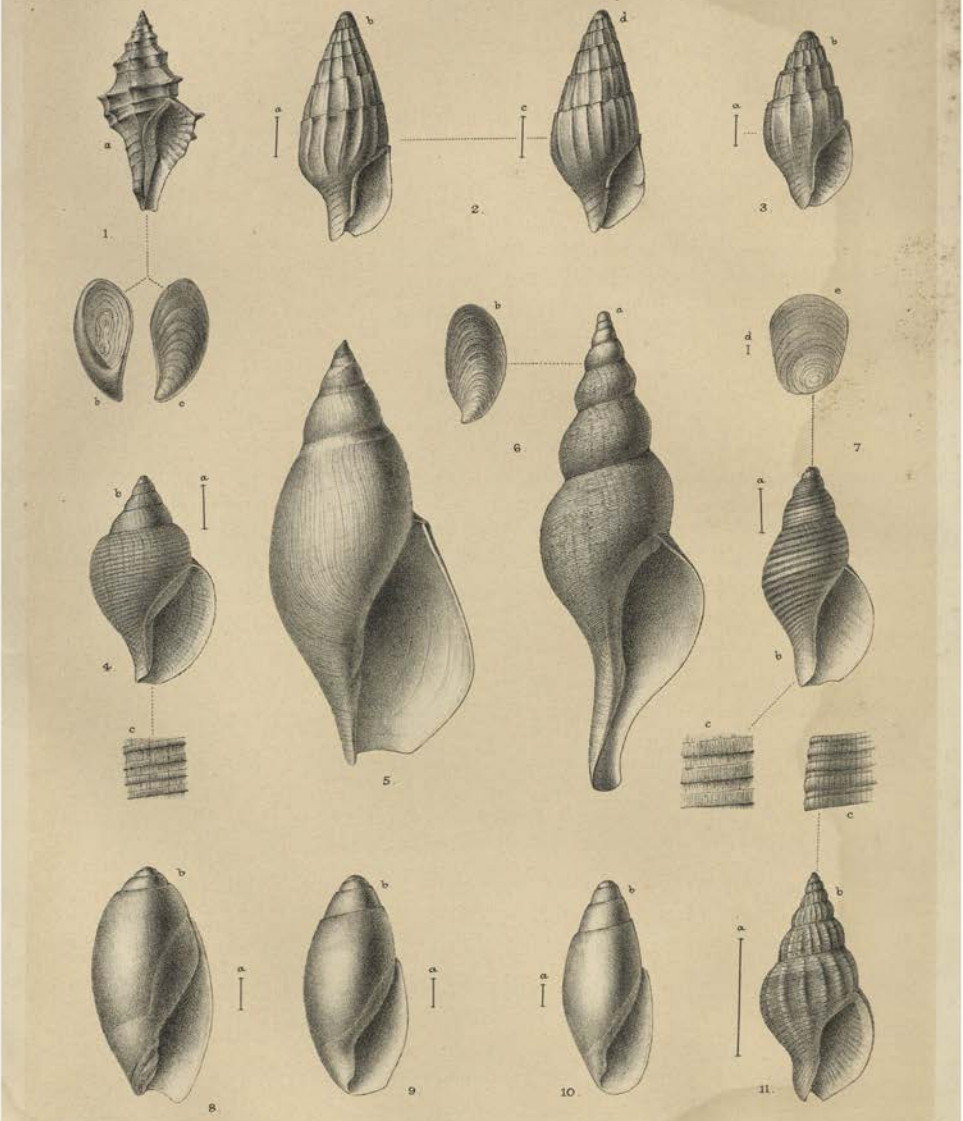
a. The natural size. | *b.* The shell, enlarged.

Fig. 10. *Oliva* (*Olivella*) *ephamilla*, n. sp. 227

a. The natural size. | *b.* The shell, enlarged.

Fig. 11. *Phos naucratoris*, n. sp. 218

a. The natural size. | *c.* The sculpture, magnified 20 diameters.
b. The shell, enlarged.



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FASCIOLARIA, COLUMBELLA, PROVOCATOR.
BUCCINUM, OLIVELLA, PHOS.

PLATE XIV.

PLATE XIV.

PAGE

Fig. 1. *Fusus sarissophorus*, n. sp. 196

a. The natural size. | *b.* The shell, enlarged.

Fig. 2. *Fusus radialis*, n. sp. 195

a. The natural size. | *b.* The shell, enlarged.

Fig. 3. *Fusus pagodoïdes*, n. sp. 197

a. The natural size.
b. The shell, enlarged.
c. The natural size of the operculum.
d. The same, enlarged.

Fig. 4. *Fasciolaria* (*Latirus*) *strangei*, A. Adams 245

Fig. 5. *Mitra* (*Cancilla*) *rufescens*, A. Adams 249

a. The natural size. | *b.* The shell, enlarged.

Fig. 6. *Mitra* (*Cancilla*) *reticulata*, A. Adams 249

a. The natural size. | *b.* The shell, enlarged.

Fig. 7. *Volutomitra fragillima*, n. sp. 263

a. The natural size. | *b.* The shell, enlarged.

Fig. 8. *Terebra* (*Myurella*) *turrita*, E. A. Smith 381

a. The natural size. | *b.* The shell, enlarged.

Fig. 9. *Terebra bathyraphe*, E. A. Smith 377

a. The natural size. | *b.* The shell, enlarged.

Fig. 10. *Triton* (*Simpulum*) *philomelæ*, n. sp. 391

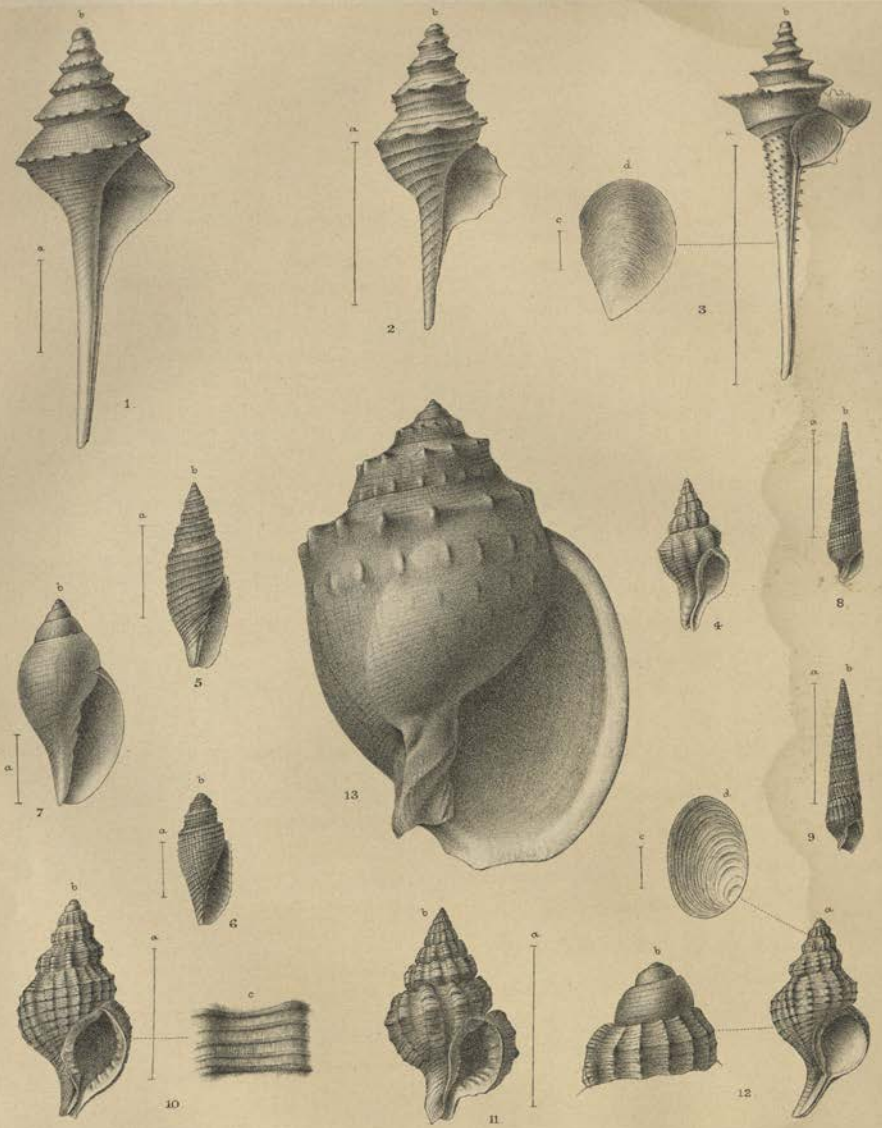
a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.

Fig. 11. *Nassaria amboynensis*, n. sp. 404

a. The natural size. | *b.* The shell, enlarged.

Fig. 12. *Nassaria kampyla*, n. sp. 405

a. The shell.
b. The natural size of the operculum.
c. The same, enlarged.
d. The apex, enlarged.



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FUSUS, FASCIOLARIA, MITRA, VOLUTOMITRA, TEREBRA, TRITON, NASSARIA, CASSIS.

PLATE XV.

PLATE XV.

PAGE

Fig. 1. *Voluta* (*Volutilithes*) *abyssicola*, Adams and Reeve 258

a. The shell, front view.
b. The same, back view.
c. The sculpture, magnified 6 diameters.

Fig. 2. *Guivillea alabastrina*, n. sp. 262

a. The shell.
b. The apex, slightly enlarged and turned round.

Fig. 3. *Voluta* (*Cymbiola*) *lutea*, n. sp. 255

a. The shell.
b. The same, slightly turned round so as to show the edge of the outer lip and the teeth of the pillar.

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VOLUTA, GUIVILLEA.

PLATE XVI.

PLATE XVI.

PAGE

Fig. 1. *Terebra mamillata*, n. sp. 381

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 15 diameters.
d. The sculpture, magnified.

Fig. 2. *Marginella* (*Glabella*) *altâ*, n. sp. 268

a. The natural size.
b. The shell, enlarged.

Fig. 3. *Marginella* (*Glabella*) *valida*, n. sp. 267

a. The natural size.
b. The shell, enlarged.
c. The natural size of
d. The young shell, enlarged.

Fig. 4. *Marginella* (*Glabella*) *brachia*, n. sp. 268

a. The natural size.
b. The shell, enlarged.
c. The natural size of
d. The young shell, enlarged.

Fig. 5. *Marginella* (*Glabella*) *pachia*, n. sp. 265

a. The natural size.
b. The shell, enlarged.

Fig. 6. *Marginella* (*Granula*) *agger*, n. sp. 271

a. The natural size.
b. The shell, enlarged.
c. The natural size of
d. The young shell, enlarged.

Fig. 7. *Marginella* (*Glabella*) *elata*, n. sp. 269

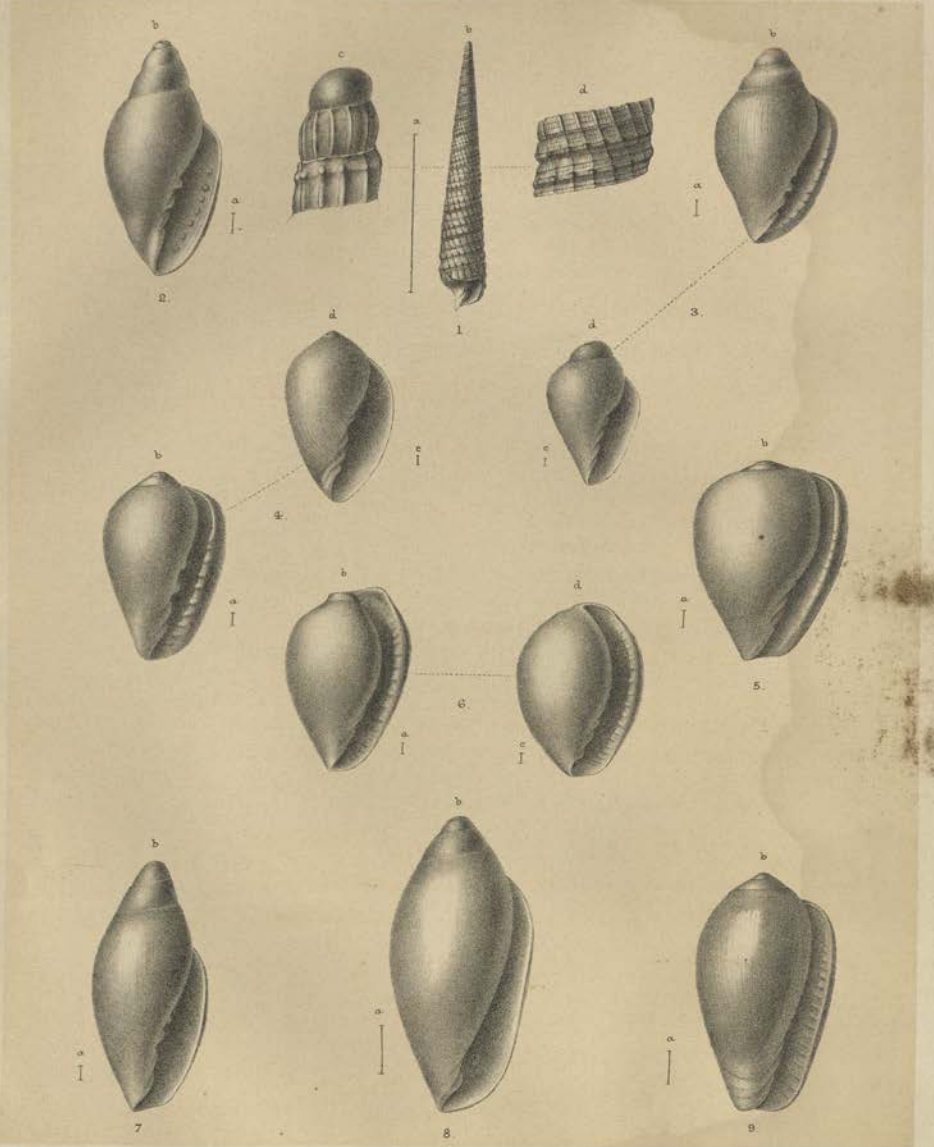
a. The natural size.
b. The shell, enlarged.

Fig. 8. *Marginella* (*Glabella*) *chrysea*, n. sp. 267

a. The natural size.
b. The shell, enlarged.

Fig. 9. *Marginella* (*Glabella*) *agapeta*, n. sp. 266

a. The natural size.
b. The shell, enlarged.



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MARGINELLA, TEREBRA.

PLATE XVII.

PLATE XVII.

PAGE

Fig. 1. *Trochus* (*Ziziphinus*) *stephanophorus*, n. sp. 58

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 8 diameters.

Fig. 2. *Trochus* (*Ziziphinus*) *tinctus*, n. sp. 63

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 30 diameters.

Fig. 3. *Trochus* (*Margarita*) *illotus*, n. sp. 86

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 10 diameters.

Fig. 4. *Trochus* (*Margarita*) *streptophorus*, n. sp. 91

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 15 diameters.

Fig. 5. *Murex* (*Pseudomurex*) *aëdonius*, n. sp. 161

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 20 diameters.

Fig. 6. *Nassa dissimilis*, n. sp. 175

a. The natural size.
b. The shell, enlarged.

Fig. 7. *Fusus valedictus*, n. sp. 201

Fig. 8. *Fusus* (*Siphonorbis*) *amblyterus*, n. sp. 205

a. The natural size of
b. A fragment of the shell.
c. The apex, magnified 10 diameters.

Fig. 9. *Phos smithi*, n. sp. 221

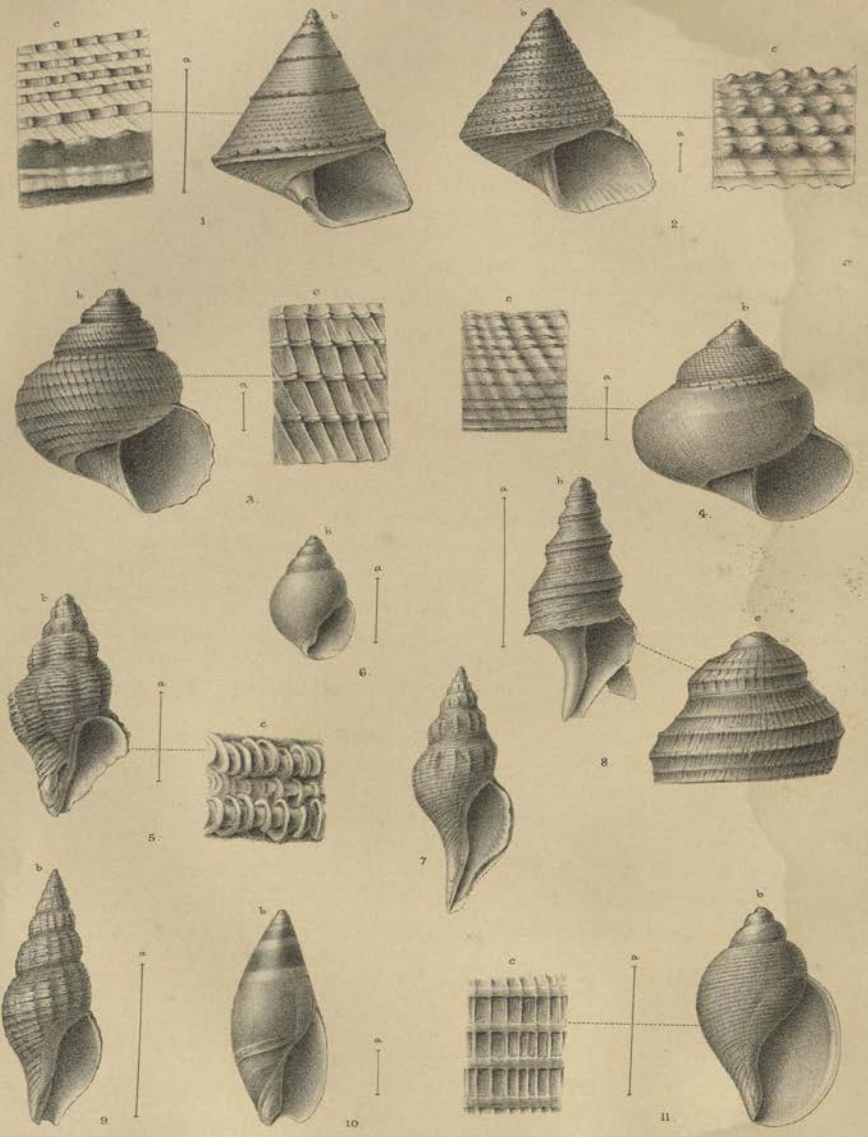
a. The natural size.
b. The shell, enlarged.

Fig. 10. *Ancilla* (*Anaulax*) *nana*, n. sp. 230

a. The natural size.
b. The shell, enlarged.

Fig. 11. *Oocorys sulcata*, Fischer 412

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 15 diameters.



TROCHUS, MUREX, NASSA, FUSUS,
PHOS, ANCILLA, OOCORYS.

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PLATE XVIII.

PLATE XVIII.

PAGE

Fig. 1. *Pleurotoma (Drillia) climacota*, n. sp. 307

a. The natural size. | *b*. The shell, enlarged.

Fig. 2. *Borsonia ceroplasta*, n. sp. 368

a. The natural size.
b. The shell, enlarged. | *c*. The apex, magnified 25 diameters.

Fig. 3. *Pleurotoma (Spirotropis) brachytona*, n. sp. 324

a. The natural size. | *b*. The shell, enlarged.

Fig. 4. *Cluthurella chyta*, n. sp. 358

a. The natural size.
b. The shell, enlarged. | *c*. The apex, magnified 30 diameters.

Fig. 5. *Pleurotoma (Drillia) laterculata*, Sow. 303

a. The natural size.
b. The shell, enlarged. | *c*. The sculpture, magnified 4½ diameters.

Fig. 6. *Pleurotoma latisinuata*, E. A. Sm. 304

a. The natural size.
b. The shell, enlarged. | *c*. The sculpture, magnified 4½ diameters.

Fig. 7. *Pleurotoma (Surcula) lepta*, n. sp. 288

a. The natural size. | *b*. The shell, enlarged.

Fig. 8. *Fusus (Euthria) chloroticus*, v. Mart. (copied from v. Martens) . . 209

a, *b*. The shell, natural size, front and back view.
c. The apex, enlarged. | *d*. The operculum, enlarged.

Fig. 9. *Cancellaria (Admete) carinata*, n. sp. 275

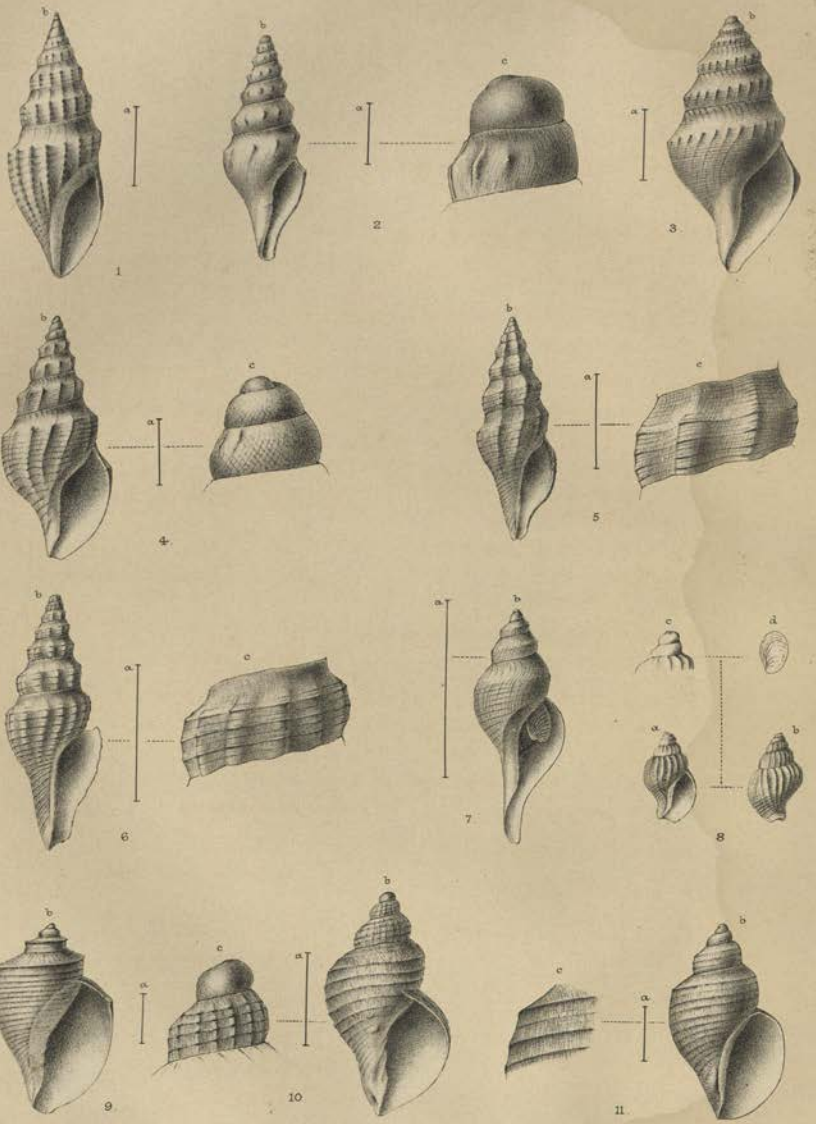
a. The natural size. | *b*. The shell, enlarged.

Fig. 10. *Cancellaria imbricata*, n. sp. 274

a. The natural size.
b. The shell, enlarged. | *c*. The apex, magnified 7 diameters.

Fig. 11. *Cancellaria (Admete) specularis*, n. sp. 274

a. The natural size.
b. The shell, enlarged. | *c*. The sculpture, magnified.



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PLEUROTOMACEA,
EUTHRIA, CANCELLARIA.

PLATE XIX.

PLATE XIX.

PAGE

Fig. 1. *Clathurella araneosa*, n. sp. 355

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 40 diameters.

Fig. 2. *Clathurella pudens*, n. sp. 354

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 40 diameters.

Fig. 3. *Pleurotoma* (*Spirotropis*) *tmeta*, n. sp. 327

a. The natural size.
b. The shell, enlarged.

Fig. 4. *Pleurotoma* (*Pleurotomella*) *brychia*, n. sp. 335

a. The natural size.
b. The shell, enlarged.
c. Side view of the animal, natural size.

Fig. 5. *Clathurella pachia*, n. sp. 353

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 40 diameters.

Fig. 6. *Pleurotoma* (*Surcula*) *anteridion*, n. sp. 295

a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.

Fig. 7. *Clionella quadruplex*, n. sp. 370

a. The natural size.
b. The sculpture, magnified 5 diameters.

Fig. 8. *Clathurella streptophora*, n. sp. 356

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 40 diameters.

Fig. 9. *Clathurella* (*Daphnella*) *compsa*, n. sp. 366

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 20 diameters.

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PLEUROTOMACEA.

PLATE XX.

PLATE XX.

PAGE

Fig. 1. *Clathurella (Daphnella) monoceros*, n. sp. 365

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 6 diameters.

Fig. 2. *Pleurotoma (Surcula) syngenes*, n. sp. 293

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 6 diameters.

Fig. 3. *Pleurotoma (Surcula) staminea*, n. sp. 286

a. The shell, natural size.
b. The sculpture, magnified 6 diameters.

Fig. 4. *Pleurotoma (Surcula) goniodes*, n. sp. 291

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 5 diameters.

Fig. 5. *Pleurotoma (Pleurotomella) papyracea*, n. sp. 338

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 5 diameters.

Fig. 6. *Clathurella chariessa*, n. sp. 352

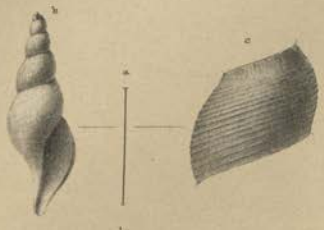
a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 15 diameters.

Fig. 7. *Pleurotoma (Genota) engonia*, n. sp. 300

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 5 diameters.

Fig. 8. *Pleurotoma (Genota) atractoïdes*, n. sp. 301

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 10 diameters.



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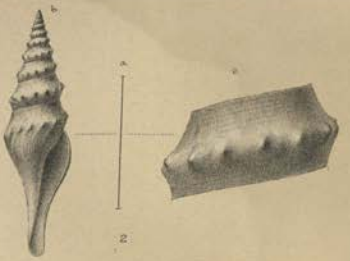

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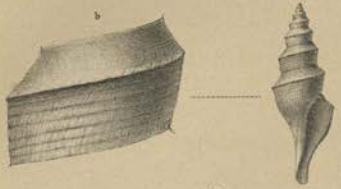

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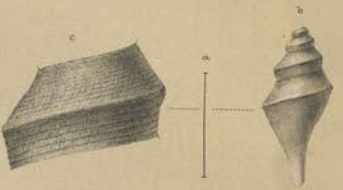

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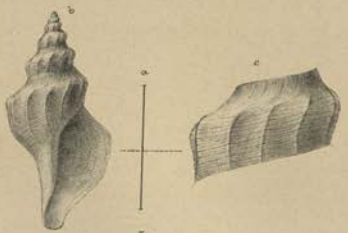

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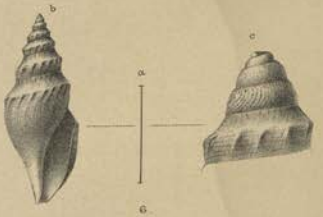

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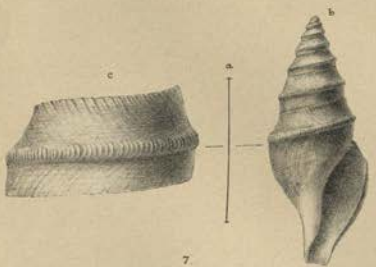

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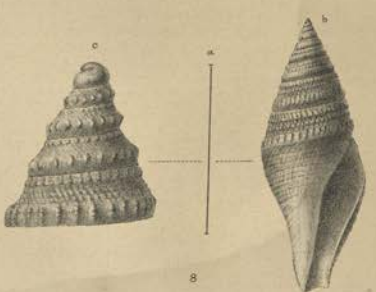

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PLEUROTOMACEA.

PLATE XXI.

PLATE XXI.

PAGE

Fig. 1. *Clathurella circumvoluta*, n. sp. 357

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 35 diameters.

Fig. 2. *Pleurotoma* (*Rhaphitoma*) *rhysa*, n. sp. 310

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 25 diameters.
d. The sculpture, magnified 75 diameters.

Fig. 3. *Pleurotoma* (*Drillia*) *sterrha*, n. sp. 305

a. The shell, natural size.
b. The sculpture, magnified 5 diameters.
c. The operculum, magnified.

Fig. 4. *Pleurotoma* (*Mangelia*) *hypsela*, n. sp. 341

a. The natural size.
b. The shell, enlarged.

Fig. 5. *Pleurotoma* (*Bela*) *phœacra*, n. sp. 313

a. The natural size.
b. The shell, enlarged.

Fig. 6. *Pleurotoma* (*Surcula*) *rotundata*, n. sp. 290

a. The shell (restored), natural size.
b. The sculpture, magnified 6 diameters.

Fig. 7. *Pleurotoma* (*Mangelia*) *tiara*, n. sp. 347

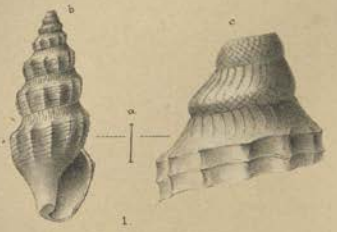
a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 30 diameters.

Fig. 8. *Borsonia silicea*, n. sp. 369

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 15 diameters.

Fig. 9. *Clathurella hormophora*, n. sp. 351

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 40 diameters.



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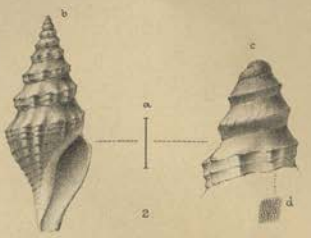

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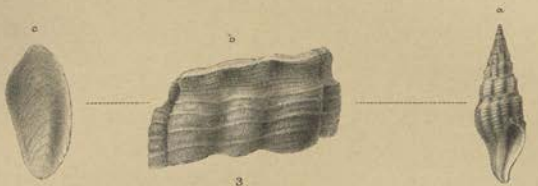

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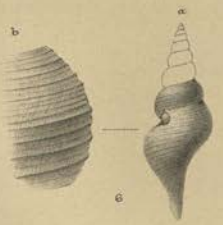

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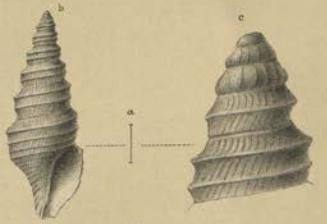

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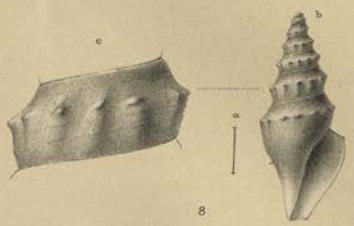

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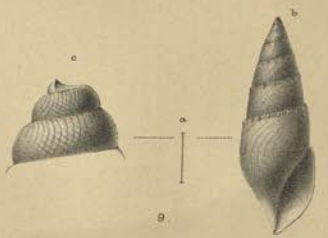

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PLEUROTOMACEA.

PLATE XXII.

PLATE XXII.

PAGE

Fig. 1. *Pleurotoma* (*Bela*) *ula*, n. sp. 312

a. The natural size. | *b.* The shell, enlarged.

Fig. 2. *Pleurotoma ischna*, n. sp. 280

a. The natural size. | *b.* The shell, enlarged.

Fig. 3. *Pleurotoma* (*Spirotropis*) *stirophora*, n. sp. 326

a. The natural size. | *b.* The shell, enlarged.

Fig. 4. *Pleurotoma spicea*, n. sp. 281

a. The natural size. | *b.* The shell, enlarged.

Fig. 5. *Pleurotoma* (*Genota*) *didyma*, n. sp. 299

a. The natural size.
b. The shell, enlarged. | *c.* The sculpture, magnified 25 diameters.

Fig. 6. *Pleurotoma* (*Surcula*) *bolbodes*, n. sp. 296

a. The natural size.
b. The shell, enlarged. | *c.* The sculpture, magnified 15 diameters.

Fig. 7. *Clathurella perpauxilla*, n. sp. 359

a. The natural size.
b. The shell, enlarged. | *c.* The sculpture, magnified 40 diameters.

Fig. 8. *Clathurella* (?) *perparva*, n. sp. 360

a. The natural size.
b. The shell, enlarged. | *c.* The apex, magnified 40 diameters.

Fig. 9. *Clionella lophoessa*, n. sp. 375

a. The natural size. | *b.* The shell, enlarged.

Fig. 10. *Clionella aglaophanes*, n. sp. 374

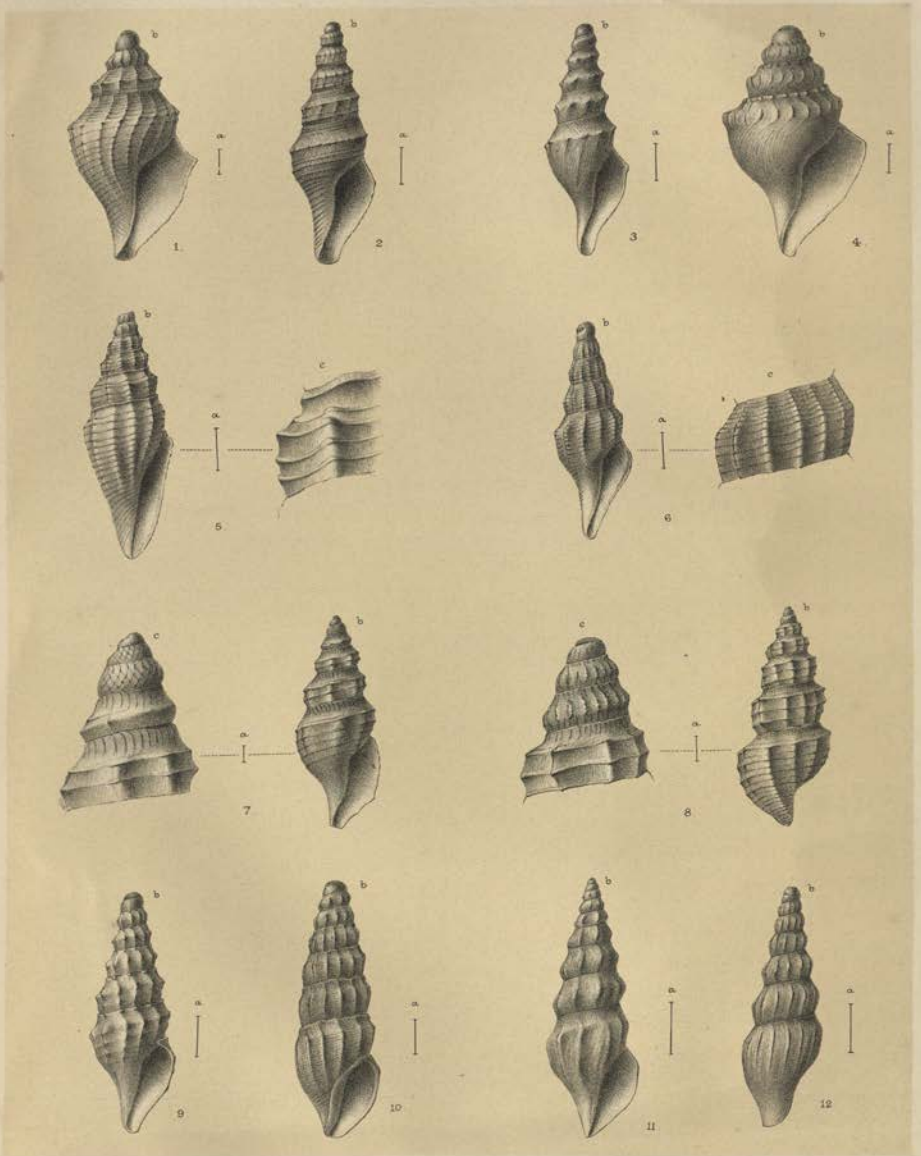
a. The natural size. | *b.* The shell, enlarged.

Fig. 11. *Pleurotoma* (*Typhlomangelia*) *lincta*, n. sp. 371

a. The natural size. | *b.* The shell, enlarged.

Fig. 12. *Clionella amblia*, n. sp. 373

a. The natural size. | *b.* The shell, enlarged.



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PLEUROTOMACEA.

PLATE XXIII.

PLATE XXIII.

PAGE

Fig. 1. *Pleurotoma* (*Mangelia*) *corallina*, n. sp. 343

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 30 diameters.
d. The sculpture, magnified 20 diameters.

Fig. 2. *Pleurotoma* (*Thesbia*) *eritima*, n. sp. 329

a. The natural size.
b. The shell, enlarged.

Fig. 3. *Pleurotoma* (*Mangelia*) *acanthodes*, n. sp. 342

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 30 diameters.
d. The sculpture, magnified 20 diameters.

Fig. 4. *Pleurotoma* (*Mangelia*) *subtilis*, n. sp. 339

a. The natural size.
b. The shell, enlarged.

Fig. 5. *Pleurotoma* (*Mangelia*) *eritmeta*, n. sp. 341

a. The natural size.
b. The shell, enlarged.

Fig. 6. *Pleurotoma* (*Mangelia*) *macra*, n. sp. 345

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 30 diameters.

Fig. 7. *Pleurotoma* (*Mangelia*) *levukensis*, n. sp. 340

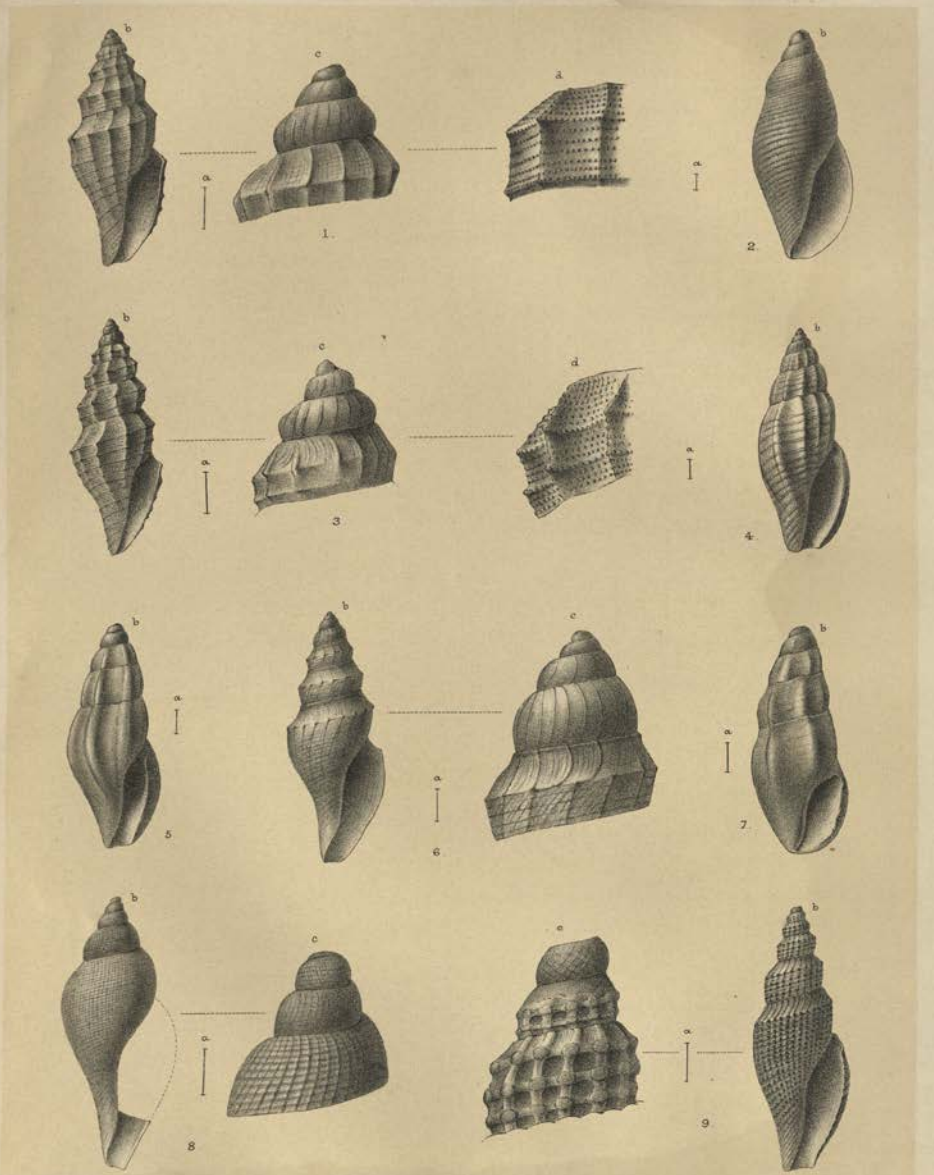
a. The natural size
b. The shell, enlarged.

Fig. 8. *Pleurotoma* (*Bela*) *dyscrita*, n. sp. 314

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 30 diameters.

Fig. 9. *Clathurella* (*Daphnella*) *aulacoessa*, n. sp. 367

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 40 diameters.



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PLEUROTOMACEA.

PLATE XXIII.

PAGE

Fig. 1. *Pleurotoma* (*Mangelia*) *corallina*, n. sp. 343

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 30 diameters.
d. The sculpture, magnified 20 diameters.

Fig. 2. *Pleurotoma* (*Thesbia*) *eritima*, n. sp. 329

a. The natural size.
b. The shell, enlarged.

Fig. 3. *Pleurotoma* (*Mangelia*) *acanthodes*, n. sp. 342

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 30 diameters.
d. The sculpture, magnified 20 diameters.

Fig. 4. *Pleurotoma* (*Mangelia*) *subtilis*, n. sp. 339

a. The natural size.
b. The shell, enlarged.

Fig. 5. *Pleurotoma* (*Mangelia*) *eritmeta*, n. sp. 341

a. The natural size.
b. The shell, enlarged.

Fig. 6. *Pleurotoma* (*Mangelia*) *macra*, n. sp. 345

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 30 diameters.

Fig. 7. *Pleurotoma* (*Mangelia*) *levukensis*, n. sp. 340

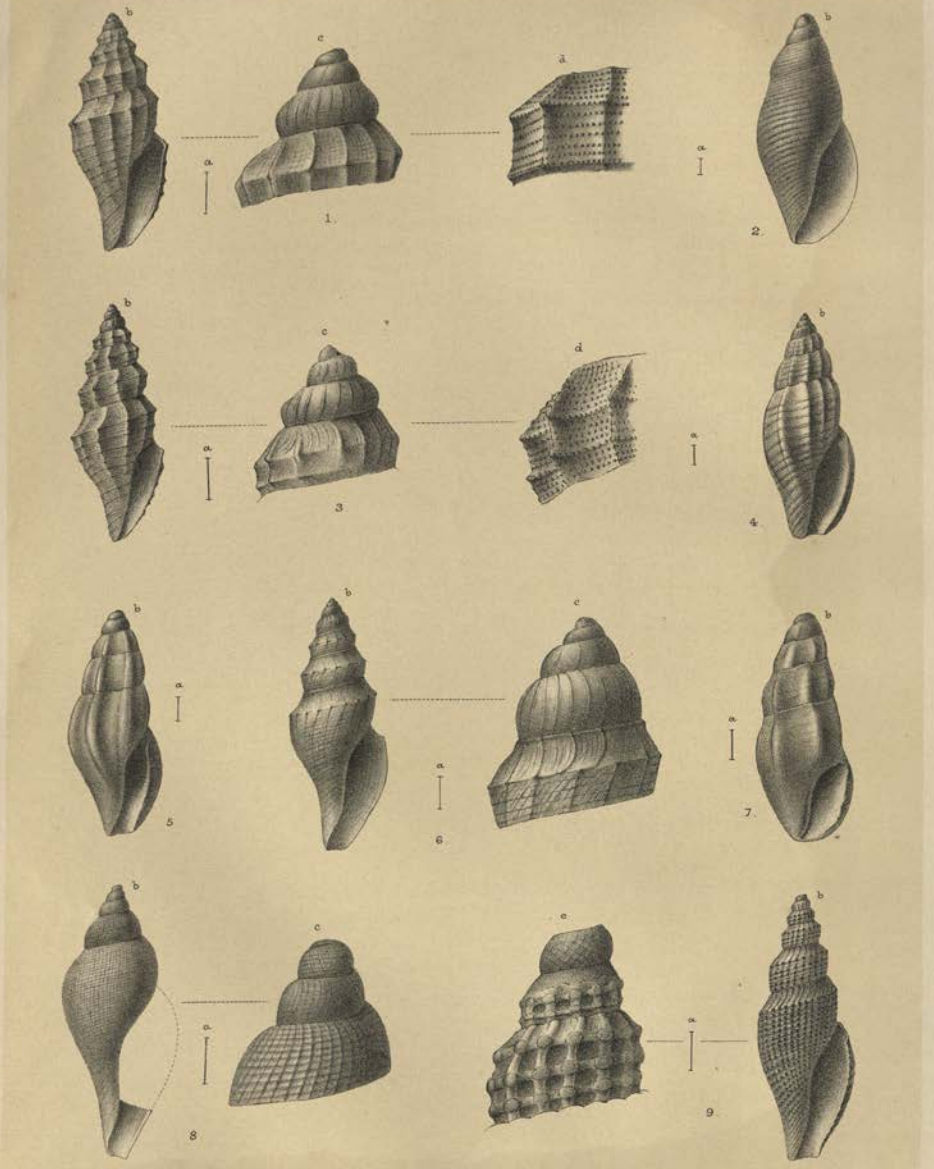
a. The natural size
b. The shell, enlarged.

Fig. 8. *Pleurotoma* (*Bela*) *dyscrita*, n. sp. 314

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 30 diameters.

Fig. 9. *Clathurella* (*Daphnella*) *aulacoessa*, n. sp. 367

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 40 diameters.



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PLEUROTOMACEA.

PLATE XXIV.

PLATE XXIV.

PAGE

Fig. 1. *Clionella tholoïdes*, n. sp. 372

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 20 diameters.

Fig. 2. *Clionella exsculpta*, n. sp. 371

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 30 diameters.

Fig. 3. *Pleurotoma* (*Thesbia*) *platamodes*, n. sp. 332

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 20 diameters.

Fig. 4. *Pleurotoma* (*Pleurotomella*) *pruina*, n. sp. 336

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 25 diameters.

Fig. 5. *Pleurotoma* (*Drillia*) *incilis*, n. sp. 304

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 25 diameters.
d. The sculpture, magnified 50 diameters.

Fig. 6. *Pleurotoma* (*Typhlomangelia*) *lithocolleta*, n. sp. 320

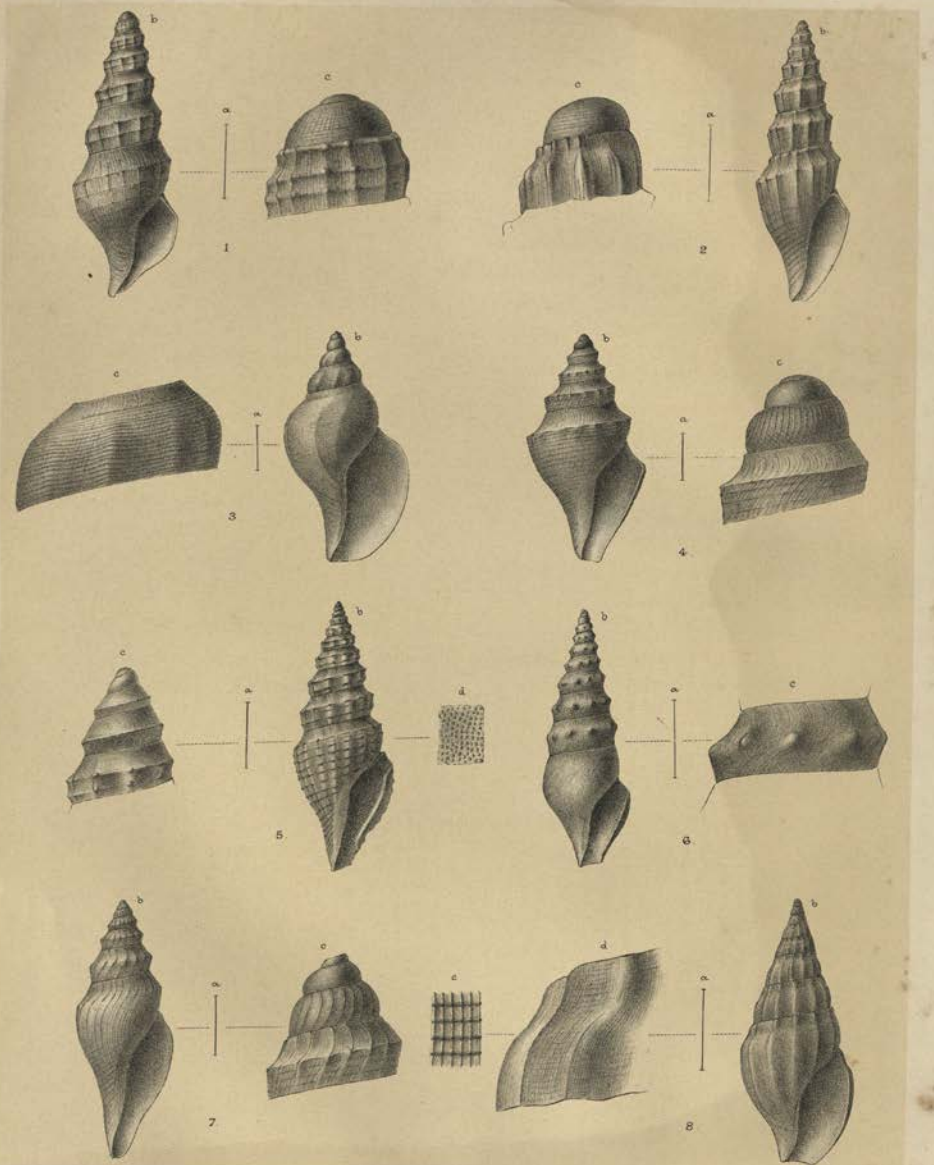
a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 10 diameters.

Fig. 7. *Pleurotoma* (*Mangelia*) *incincta*, n. sp. 346

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 20 diameters.

Fig. 8. *Pleurotoma* (*Perrona*) *marmarina*, n. sp. 328

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 60 diameters.
d. The same, magnified 10 diameters.



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PLEUROTOMACEA.

PLATE XXV.

PLATE XXV.

PAGE

Fig. 1. *Pleurotoma (Surcula) gypsata*, n. sp. 297

a. The natural size. | *b*. The apex, enlarged.

Fig. 2. *Pleurotoma (Surcula) plebeia*, n. sp. 292

a. The natural size. | *b*. The sculpture, enlarged.

Fig. 3. *Pleurotoma (Typhlomangelia) paupera*, n. sp. 317

a. The natural size. | *b*. The sculpture, enlarged.

Fig. 4. *Pleurotoma (Typhlomangelia) fluctuosa*, n. sp. 319

a, *b*. The shell, natural size.
c. The apex, enlarged.
d. The sculpture, enlarged.
e. The operculum, enlarged.
f. Natural size of the same.

Fig. 5. *Pleurotoma (Surcula) trilix*, n. sp. 287

a. The shell, natural size.
b. The apex, enlarged.
c. The sculpture, enlarged.

Fig. 6. *Pleurotoma (Typhlomangelia) pyrrha*, n. sp. 316

a, *b*. The shell, natural size. | *c*. The sculpture, enlarged.

Fig. 7. *Pleurotoma (Spirotropis) studeriana*, v. Mart. 322

(Copied from Professor v. Martens' Conchologische Mittheilungen, vol. i. pt. 3, pl. viii. fig. 3.)

a, *b*. The shell, natural size. | *c*. The apex, enlarged.

Fig. 8. *Pleurotoma (Thesbia) corpulenta*, n. sp. 331

a. The natural size. | *b*. The shell, enlarged.

Fig. 9. *Pleurotoma (Spirotropis) bulbacea*, n. sp. 335

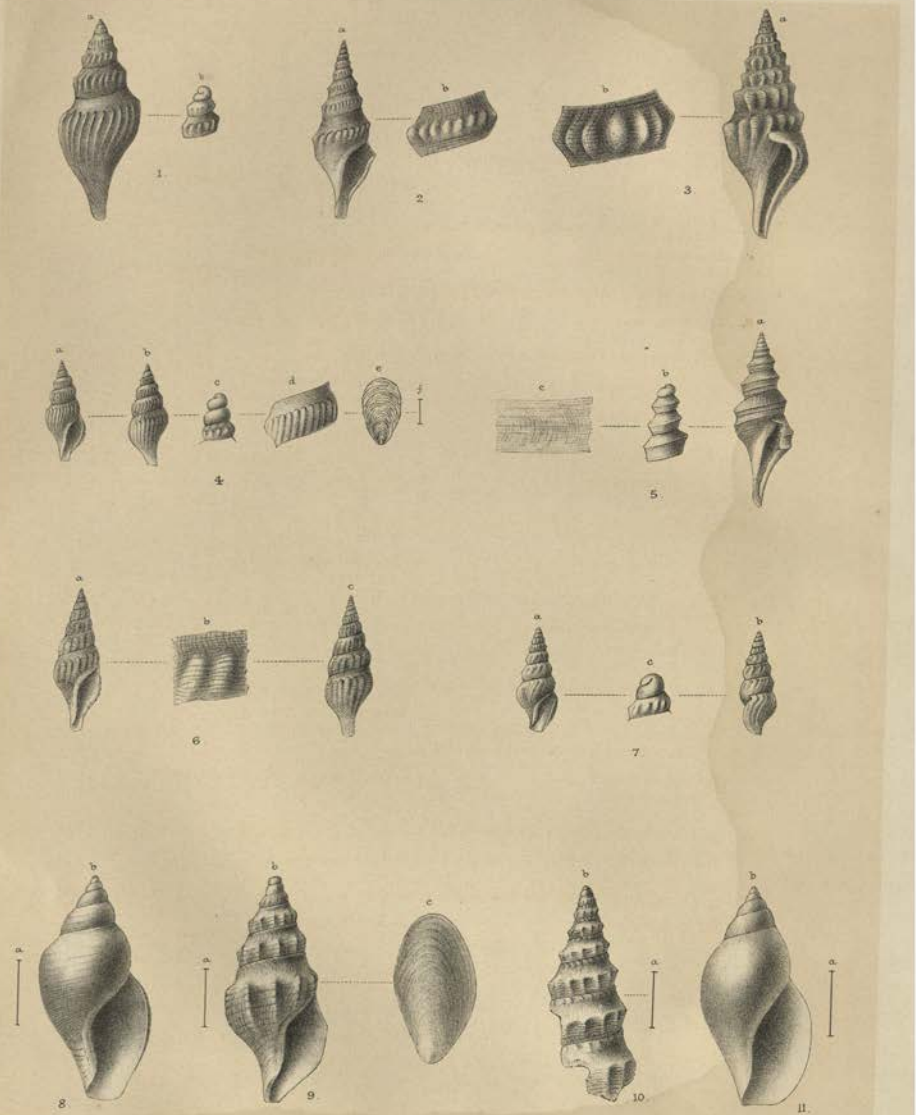
a. The natural size.
b. The shell, enlarged.
c. The operculum, magnified 10 diameters.

Fig. 10. *Pleurotoma (Surcula) hemimeres*, n. sp. 294

a. The natural size. | *b*. The shell, enlarged

Fig. 11. *Pleurotoma (Thesbia) translucida*, n. sp. 330

a. The natural size. | *b*. The shell, enlarged.



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PLEUROTOMACEA.

PLATE XXVI.

PLATE XXVI.

PAGE

Fig. 1. *Pleurotoma xanthophaës*, n. sp. 282

a. The natural size.
b. The shell, enlarged.

Fig. 2. *Pleurotoma phymatias*, n. sp. 283

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 5 diameters.

Fig. 3. *Pleurotoma (Surcula) dissimilis*, n. sp. 298

Fig. 4. *Pleurotoma (Drillia) horrenda*, n. sp. 308

Fig. 5. *Pleurotoma (Drillia) kymatoëssa*, n. sp. 309

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 25 diameters.

Fig. 6. *Pleurotoma (Drillia) spadix*, n. sp. 310

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 30 diameters.

Fig. 7. *Pleurotoma (Bela) climakis*, n. sp. 315

Fig. 8. *Pleurotoma (Spirotropis) agnactica*, n. sp. 323

a, *b*. The shell, natural size.

Fig. 9. *Pleurotoma (Thesbia) membranacea*, n. sp. 333

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 15 diameters.

Fig. 10. *Pleurotoma (Thesbia) xanthias*, n. sp. 334

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 25 diameters.

Fig. 11. *Clathurella cala*, n. sp. 361

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 40 diameters.

Fig. 12. *Clathurella homœotata*, n. sp. 362

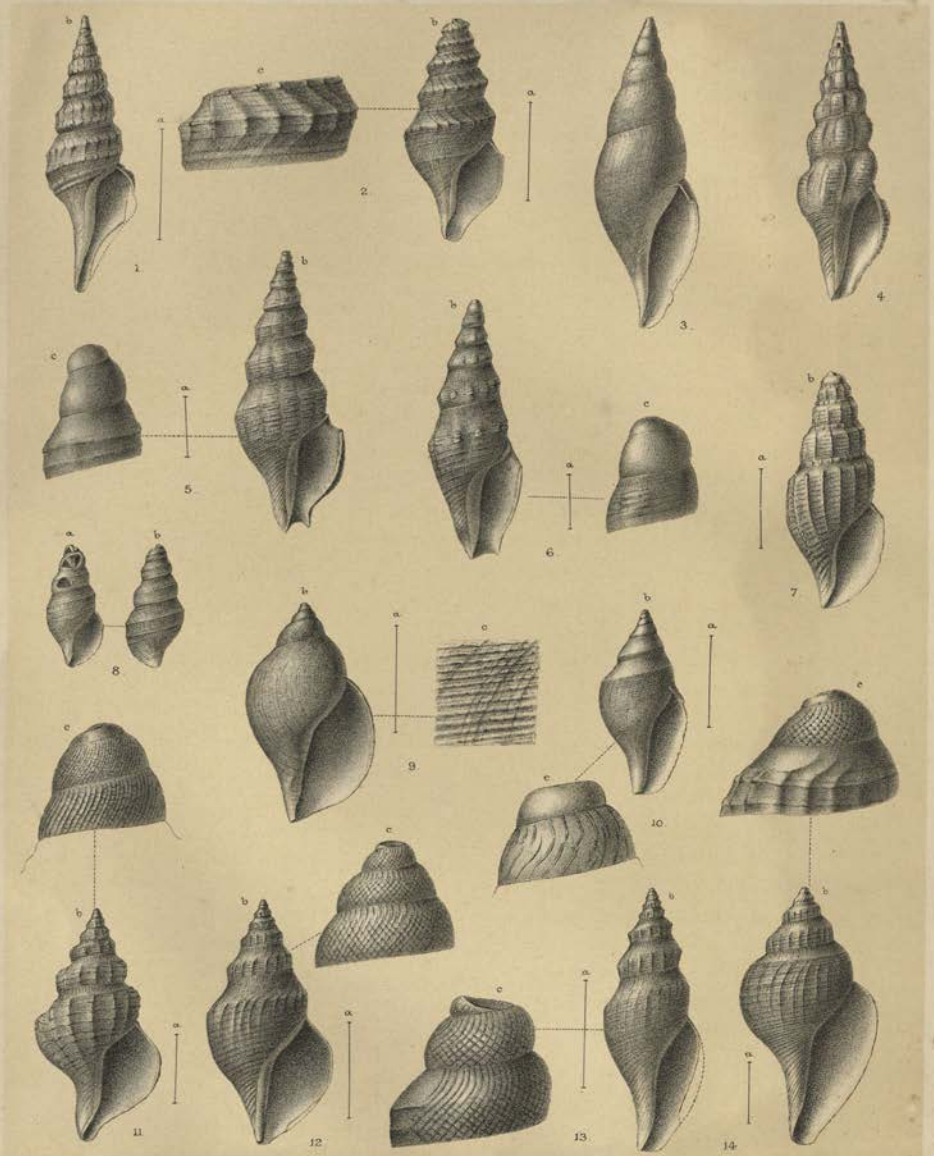
a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 30 diameters.

Fig. 13. *Clathurella porcellana*, n. sp. 363

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 60 diameters.

Fig. 14. *Clathurella phyxanor*, n. sp. 364

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 30 diameters.



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PLEUROTOMACEA.

PLATE XXVII.

PLATE XXVII.

PAGE

Fig. 1. *Natica philippinensis*, n. sp. 442

a, *b*. The shell, natural size. | *c*. The apex, enlarged.

Fig. 2. *Natica atypha*, n. sp. 438

a, *b*. The shell, natural size. | *c*. The apex, enlarged.

Fig. 3. *Natica pseustes*, n. sp. 444

a, *b*. The shell, natural size. | *c*. The apex, enlarged.

Fig. 4. *Natica* (*Amauropsis*) *suturalis*, n. sp. 455

a, *b*. The shell, natural size.

Fig. 5. *Natica radiata*, n. sp. 436

a, *b*. The shell, natural size. | *c*. The apex, enlarged.

Fig. 6. *Natica amphiala*, n. sp. 437

a, *b*. The shell, natural size. | *c*. The apex, enlarged.

Fig. 7. *Natica leptalea*, n. sp. 441

a, *b*. The shell, natural size. | *c*. The apex, enlarged.

Fig. 8. *Natica xantha*, n. sp. 445

a, *b*. The shell, natural size. | *c*. The apex, enlarged.

Fig. 9. *Natica* (*Lunatia*) *presina*, n. sp. 449

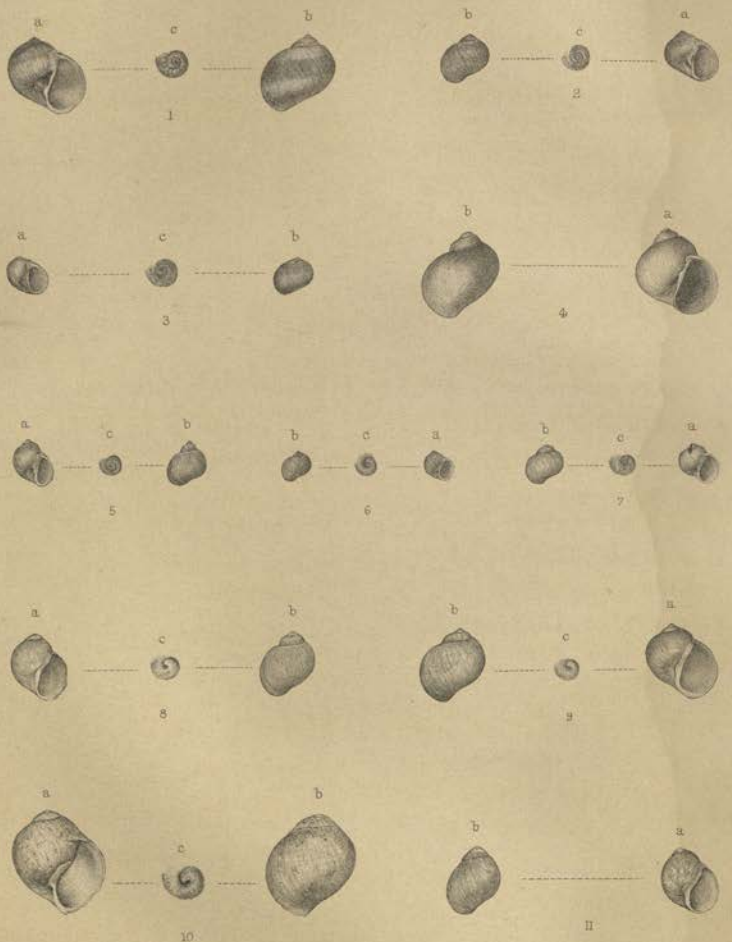
a, *b*. The shell, natural size. | *c*. The apex, enlarged.

Fig. 10. *Natica fartilis*, n. sp. 446

a, *b*. The shell, natural size. | *c*. The apex, enlarged.

Fig. 11. *Natica* (*Amauropsis*) *apora*, n. sp. 454

a, *b*. The shell, natural size.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11

PLATE XXVIII.

PLATE XXVIII.

PAGE

Fig. 1. *Natica psila*, n. sp. 443

a. The natural size. | *b*. The shell, enlarged.

Fig. 2. *Natica insularum*, n. sp. 440

Fig. 3. *Natica effossa*, n. sp. 439

a. The natural size. | *b*. The shell, enlarged.

Fig. 4. *Natica* (*Amauropsis*) *perscalpta*, v. Mart. 454

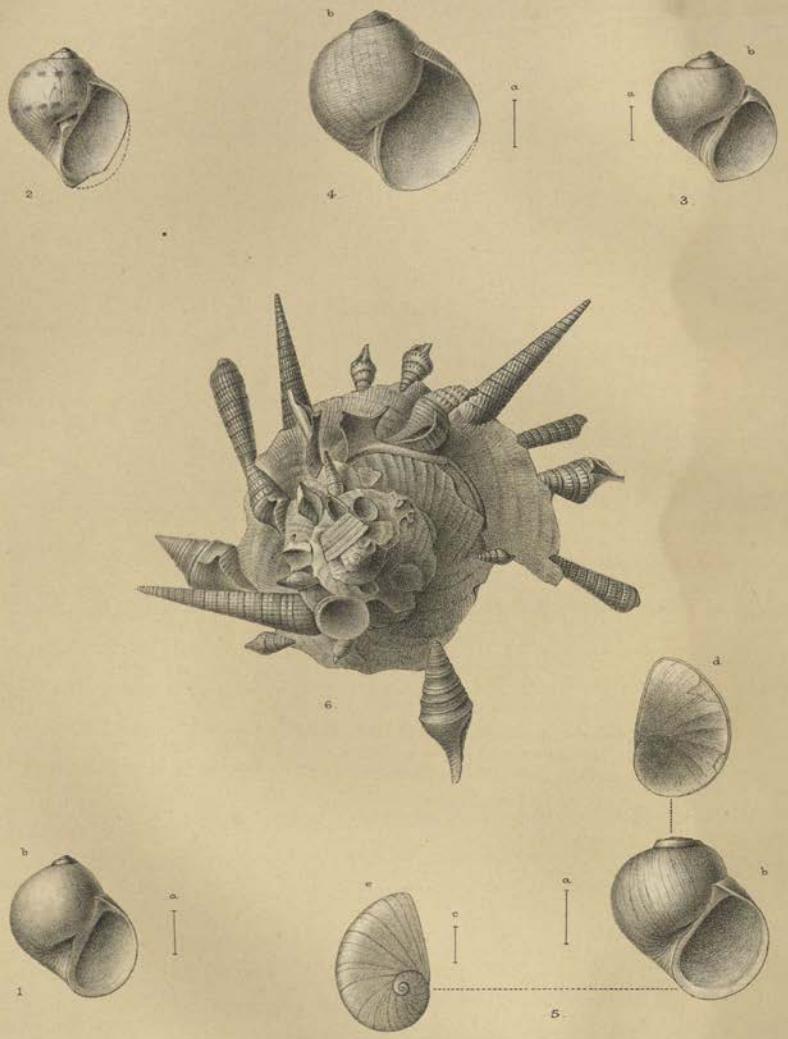
a. The natural size. | *b*. The shell, enlarged.

Fig. 5. *Natica grisea*, v. Mart. 432

a. The natural size.
b. The shell, enlarged.
c. The natural size of the operculum.
d. The operculum, inner face.
e. The same, outer face.

Fig. 6. *Xenophora pallidula*, Reeve 464

The shell is set about with many specimens of *Terebra mamillata*, n. sp., and *Terebra*, sp., *Pleurotoma speciosa*, Reeve, *Pleurotoma deshaysii*, Doûmets, *Pleurotoma climacota*, n. sp., *Pleurotoma*, sp., *Mitra*, sp., *Turbo* (*Calcar*), sp., *Cerithium*, sp., *Leda*, var. sp., *Limopsis*, sp., *Circe*, sp., and others.



NATICA, XENOPHORA.

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PLATE XXIX.

PLATE XXIX.

PAGE

Fig. 1. *Turritella cordismei*, n. sp. 469

a. The natural size.
b. The shell, enlarged.
c. The apex, enlarged.
d. The sculpture, enlarged.

Fig. 2. *Turritella austrina*, n. sp. 470

a. The natural size.
b. The shell, enlarged.
c. The apex, enlarged.
d. The operculum, enlarged.
e. The natural size of
f. A peculiarly broad form.

Fig. 3. *Turritella deliciosa*, n. sp. 471

a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.
d. The outer lip, enlarged.
e. The apex, enlarged.

Fig. 5. *Turritella admirabilis*, n. sp. 472

a. The natural size.
b. The sculpture, enlarged.
c. The sculpture of the base, enlarged.

Fig. 6. *Turritella lamellosa*, n. sp. 474

a. The natural size.
b. The apex, enlarged.
c. The sculpture, enlarged.
d. The sculpture of the base, enlarged.

R. Kidston del. F.Huth, Lith^r Edin^r

TURRITELLA.

PLATE XXX.

PLATE XXX.

PAGE

Fig. 1. *Cerithiopsis balteata*, n. sp. 526

a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.

Fig. 2. *Cerithiopsis fayalensis*, n. sp. 527

a. The natural size.
b. The shell, enlarged.
c. The sculpture, enlarged.

Fig. 3. *Turritella runcinata*, n. sp. 475

a. The shell, natural size.
b. The outer lip, enlarged.
c. The apex, enlarged.

Fig. 4. *Turritella accisa*, n. sp. 476

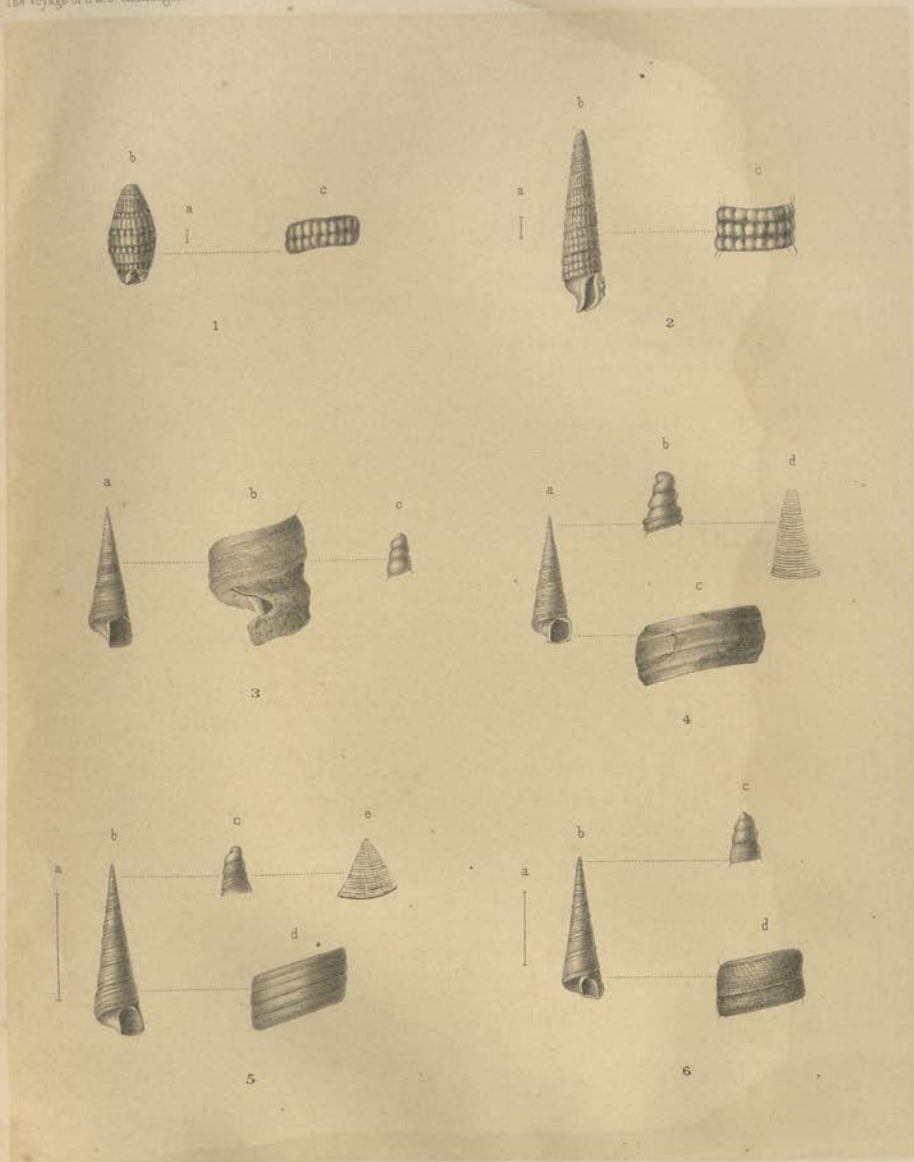
a. The shell, natural size.
b. The apex, enlarged.
c. The sculpture, enlarged.
d. The sculpture of the base, enlarged.

Fig. 5. *Turritella carlottæ*, n. sp. 478

a. The natural size.
b. The shell, enlarged.
c. The apex, enlarged.
d. The sculpture, enlarged.
e. The sculpture of the base, enlarged.

Fig. 6. *Turritella philippensis*, n. sp. 479

a. The natural size.
b. The shell, enlarged.
c. The apex, enlarged.
d. The sculpture, enlarged.



R. Kidston del.

F. Huth, Lith. Edin.

CERITHIOPSIS. TURRITELLA.

PLATE XXXI.

PLATE XXXI.

PAGE

Fig. 1. *Vermetus* (?) *cyclicus*, n. sp. 465

a. The natural size.
b. The shell, magnified 30 diameters, seen in profile.
c. The shell, magnified 30 diameters, seen from above.
d. The apex, lying across the last whorl, magnified 70 diameters.

Fig. 2. *Odostomia hyphala*, n. sp. 483

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 25 diameters.

Fig. 3. *Odostomia corpulenta*, n. sp. 484

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 25 diameters.

Fig. 4. *Odostomia oxia*, n. sp. 484

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 40 diameters.

Fig. 5. *Odostomia scopulorum*, n. sp. 485

a. The natural size.
b. The shell, magnified 35 diameters.
c. The apex, magnified 60 diameters.

Fig. 6. *Odostomia oödes*, n. sp. 485

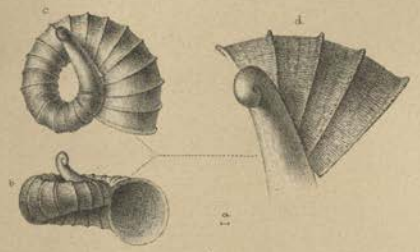
a. The natural size.
b. The shell, magnified 25 diameters.
c. The apex, magnified 45 diameters.

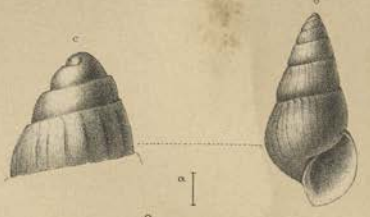
Fig. 7. *Odostomia pupa*, n. sp. 486

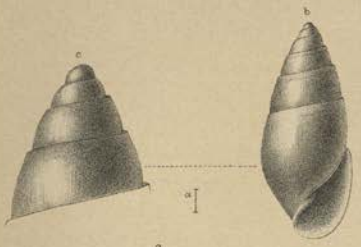
a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 30 diameters.

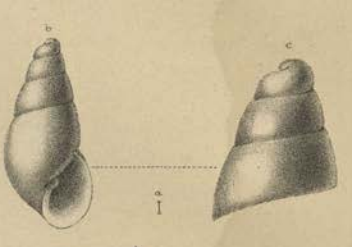
Fig. 8. *Odostomia kymatodes*, n. sp. 486

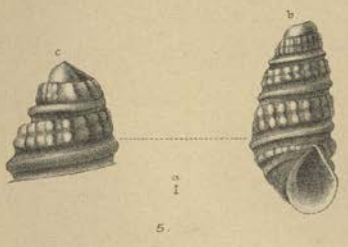
a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 50 diameters.
d. A young shell, enlarged.

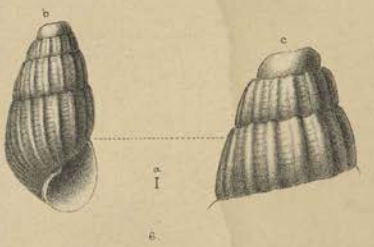


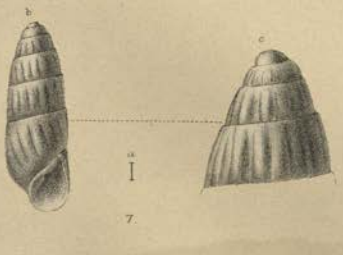


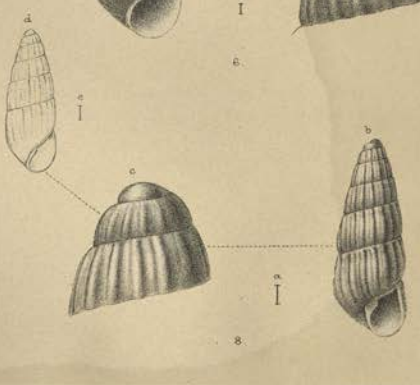












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VERMETUS, ODOSTOMIA.

PLATE XXXII.

PLATE XXXII.

PAGE

Fig. 1. *Odostomia* (*Turbonilla*) *scalpidens*, n. sp. 489

a. The natural size.
b. The shell, magnified 9 diameters.
c. The apex, magnified 60 diameters.

Fig. 2. *Odostomia* (*Turbonilla*) *philomelæ*, n. sp. 490

a. The natural size.
b. The shell, magnified 15 diameters.
c. The apex, magnified 50 diameters.

Fig. 3. *Odostomia* (*Turbonilla*) *homœotata*, n. sp. 490

a. The natural size.
b. The shell, magnified 15 diameters.
c. The apex, magnified 50 diameters.

Fig. 4. *Odostomia* (*Turbonilla*) *rhabdota*, n. sp. 491

a. The natural size.
b. The shell, magnified 11 diameters.
c. The apex, magnified 50 diameters.

Fig. 5. *Odostomia* (*Turbonilla*) *rhabdoïdes*, n. sp. 492

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 50 diameters.
d. The sculpture, magnified 35 diameters.

Fig. 6. *Odostomia* (*Turbonilla*) *kymatoessa*, n. sp. 492

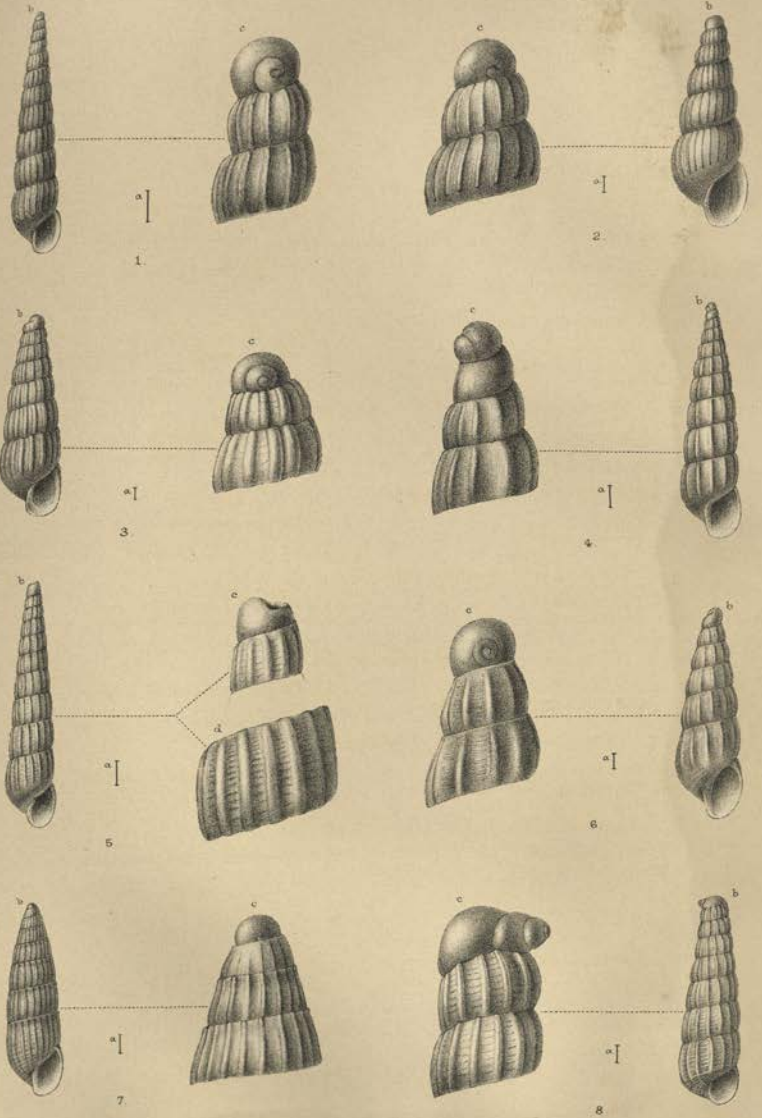
a. The natural size.
b. The shell, magnified 15 diameters.
c. The apex, magnified 50 diameters.

Fig. 7. *Odostomia* (*Turbonilla*) *phrykalea*, n. sp. 493

a. The natural size.
b. The shell, magnified 12 diameters.
c. The apex, magnified 50 diameters.

Fig. 8. *Odostomia* (*Turbonilla*) *dipsycha*, n. sp. 494

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 50 diameters.



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ODOSTOMIA.

PLATE XXXIII.

PLATE XXXIII.

PAGE

Fig. 1. *Odostomia (Turbonilla) amœbæa*, n. sp. 495

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 60 diameters.

Fig. 2. *Eulimella rudis*, n. sp. 496

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 50 diameters.

Fig. 3. *Eulimella acerrima*, n. sp. 496

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 60 diameters.

Fig. 4. *Eulimella coacta*, n. sp. 498

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 50 diameters.

Fig. 5. *Eulimella subtilis*, n. sp. 499

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 60 diameters.

Fig. 6. *Eulimella laxa*, n. sp. 497

a. The natural size,
b. The shell, enlarged.
c. The apex, magnified 40 diameters.

Fig. 7. *Eulimella angusta*, n. sp. 497

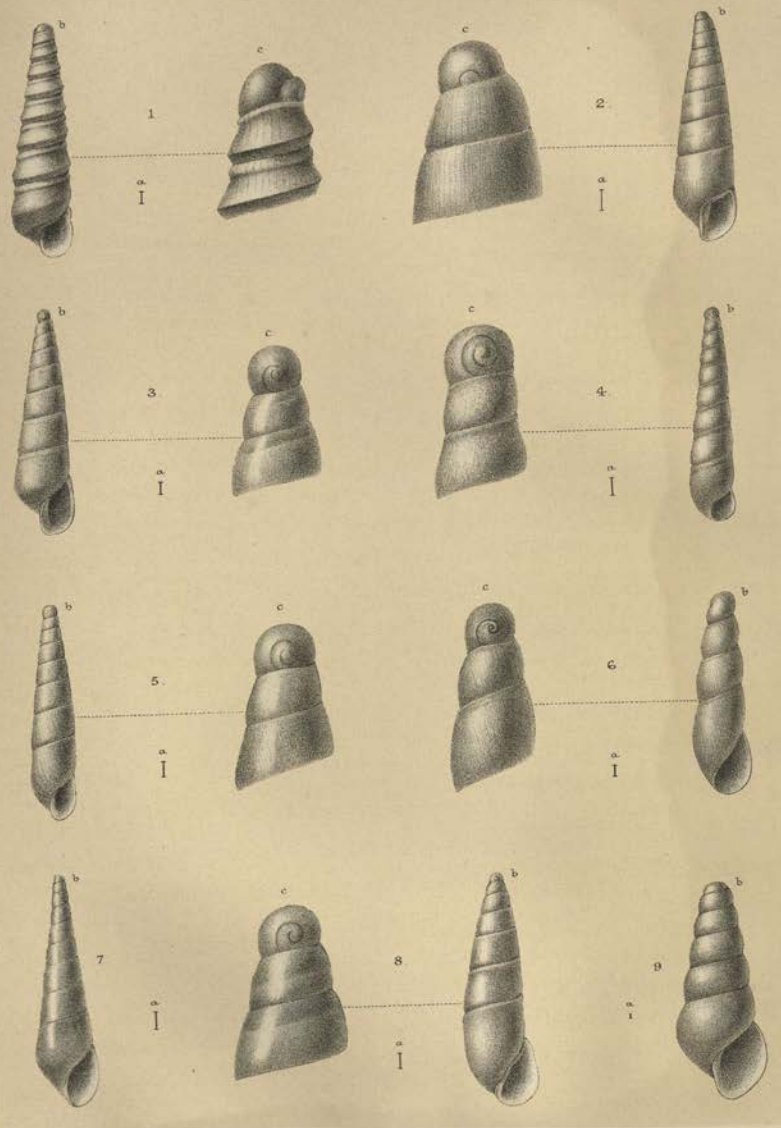
a. The natural size.
b. The shell, enlarged.

Fig. 8. *Odostomia convoluta*, n. sp. 482

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 60 diameters.

Fig. 9. *Aclis minutissima*, n. sp. 504

a. The natural size.
b. The shell, magnified 70 diameters.



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ODOSTOMIA, EULIMELLA, ACLIS.

PLATE XXXIV.

PLATE XXXIV.

PAGE

Fig. 1. *Aclis mizon*, n. sp. 501

a. The natural size.
b, *c*. The shell enlarged, front and back views.
d. The apex, magnified.
e. The sculpture, magnified.

Fig. 2. *Aclis hyalina*, n. sp. 502

a. The natural size.
b, *c*. The shell enlarged, front and back views.
d. The apex, magnified.

Fig. 3. *Aclis sarissa*, n. sp. 503

a. The natural size.
b, *c*. The shell enlarged, front and back views.

Fig. 4. *Fenella elongata*, n. sp. 621

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture, magnified.

Fig. 5. *Dunkeria falcifera*, n. sp. 500

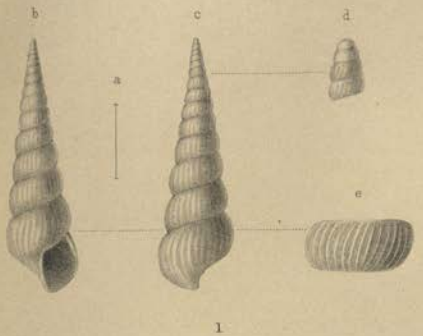
a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified.

Fig. 6. *Oniscia cithara*, n. sp. 410

The shell, natural size.

Fig. 7. *Ranella fijiensis*, n. sp. 397

a, *b*. The shell, natural size; front and back views.



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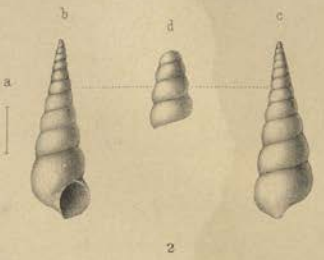

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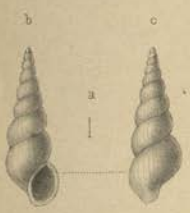

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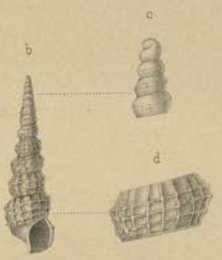

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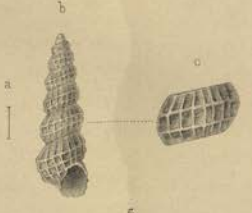

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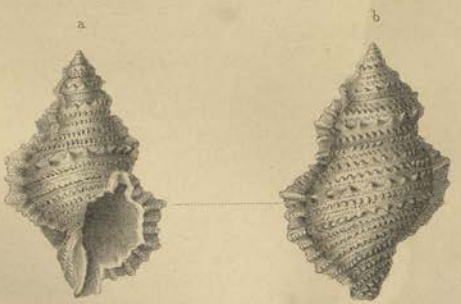

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ACLIS. FENELLA. DUNKERIA.
ONISCIA. RANELLA.

PLATE XXXV.

PLATE XXXV.

PAGE

Fig. 1. *Eulima psila*, n. sp. 508

a. The natural size.
b. The shell, enlarged
c. The apex, magnified 60 diameters.

Fig. 2. *Eulima fasciata*, n. sp. 509

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 60 diameters.

Fig. 3. *Eulima piriformis*, Brugn. 507

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 60 diameters.

Fig. 4. *Eulima chascanon*, n. sp. 510

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 60 diameters.

Fig. 5. *Eulima hians*, n. sp. 510

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 45 diameters.

Fig. 6. *Eulima ephamilla*, n. sp. 511

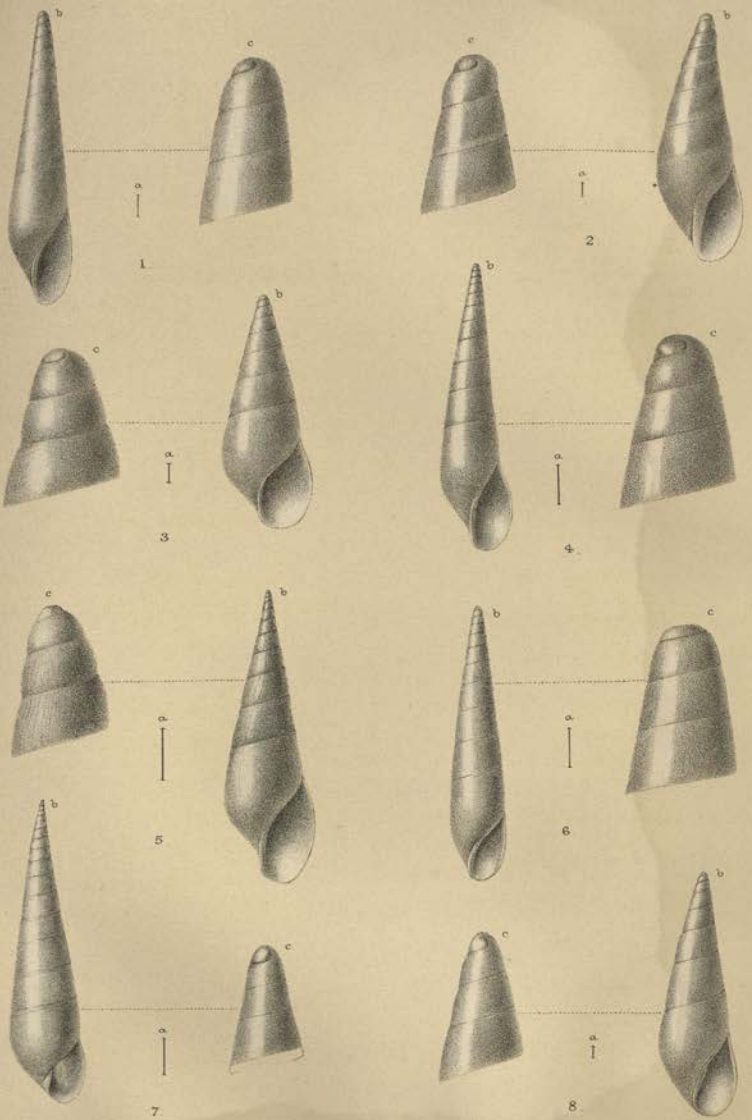
a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 45 diameters.

Fig. 7. *Eulima oxytata*, n. sp. 512

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 80 diameters.

Fig. 8. *Eulima acanthyllis*, n. sp. 512

a. The natural size.
b. The shell, magnified 30 diameters.
c. The apex, magnified 80 diameters.



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EULIMA.

PLATE XXXVI.

PLATE XXXVI.

PAGE

Fig. 1. *Eulima acerrima*, n. sp. 513

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 80 diameters.

Fig. 2. *Eulima sarissa*, n. sp. 514

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 80 diameters.

Fig. 3. *Eulima latipes*, n. sp. 515

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 80 diameters.

Fig. 4. *Eulima famelica*, n. sp. 515

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 70 diameters.

Fig. 5. *Eulima chyta*, n. sp. 516

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 70 diameters.

Fig. 6. *Eulima campyla*, n. sp. 516

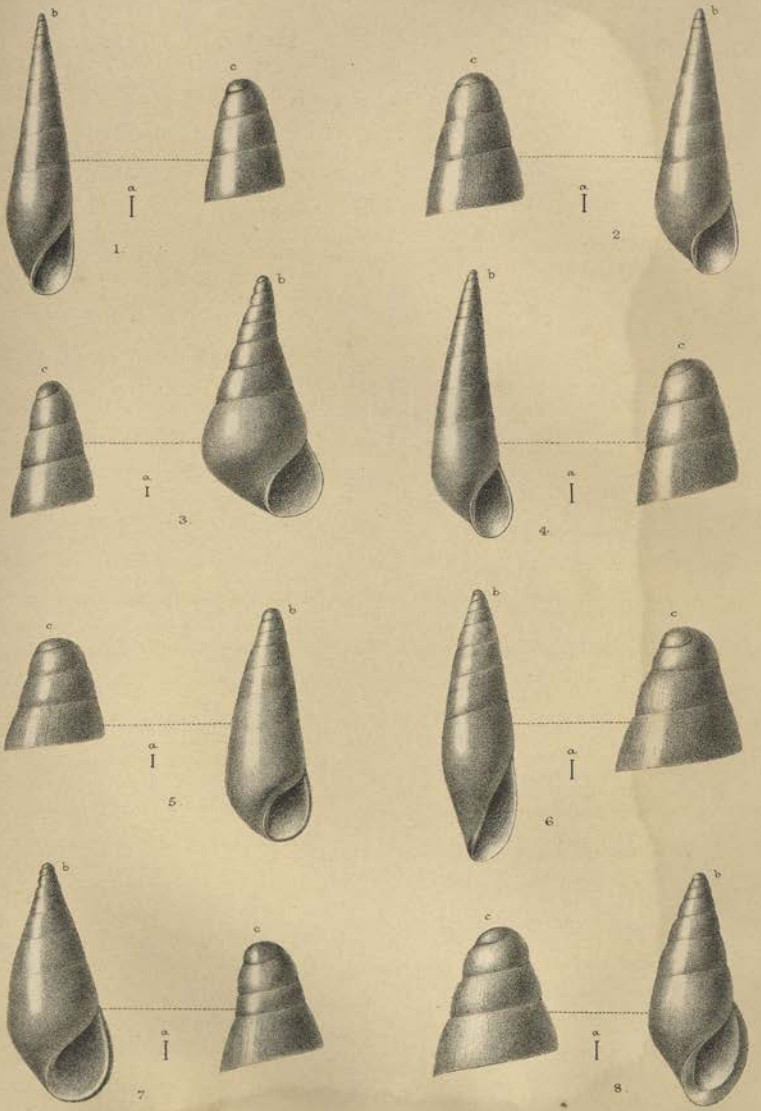
a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 60 diameters.

Fig. 7. *Eulima fallax*, n. sp. 517

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 60 diameters.

Fig. 8. *Eulima chydæa*, n. sp. 518

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 50 diameters.



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EULIMA.

PLATE XXXVII.

PLATE XXXVII.

PAGE

Fig. 1. *Eulima cylindrata*, n. sp. 518

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 50 diameters.

Fig. 2. *Eulima gomphus*, n. sp. 519

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 50 diameters.

Fig. 3. *Eulima hyalina*, n. sp. 520

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 50 diameters.

Fig. 4. *Eulima amblia*, n. sp. 521

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 45 diameters.

Fig. 5. *Eulima dissimilis*, n. sp. 522

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 50 diameters.

Fig. 6. *Eulima hebes*, n. sp. 521

a. The natural size.
b. The shell, enlarged.

Fig. 7. *Eulima eurychades*, n. sp. 522

a. The natural size.
b. The shell, enlarged.

Fig. 8. *Mucronalia xanthias*, n. sp. 523

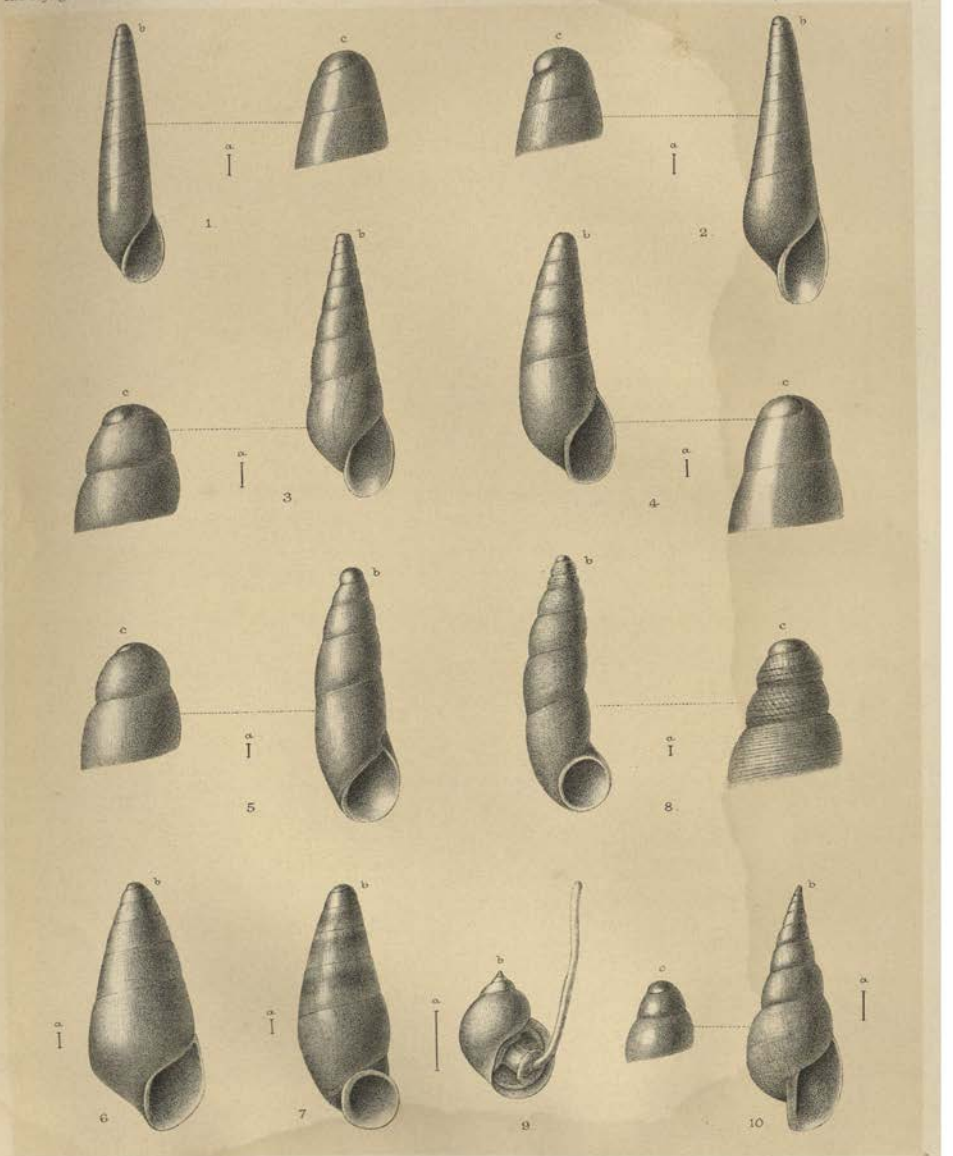
a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 100 diameters.

Fig. 9. *Stilifer brychius*, n. sp. 524

a. The natural size.
b. The shell, enlarged.

Fig. 10. *Stilifer crotaphis*, n. sp. 524

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 60 diameters.



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EULIMA, MUCRONALIA, STILIFER.

PLATE XXXVIII.

PLATE XXXVIII.

PAGE

Fig. 1. *Cerithiopsis ridicula*, n. sp. 528

a. The natural size.
b. The shell, magnified 35 diameters.
c. The apex, magnified 70 diameters.

Fig. 2. *Cerithiopsis turrigera*, n. sp. 529

a. The natural size.
b. The shell, magnified 20 diameters.
c. The apex, magnified 60 diameters.

Fig. 3. *Bittium perparvulum*, n. sp. 554

a. The natural size.
b. The shell, magnified 20 diameters.
c. The apex, magnified 70 diameters.

Fig. 4. *Bittium diplax*, n. sp. 555

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 70 diameters.

Fig. 5. *Bittium furvum*, n. sp. 556

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 70 diameters.

Fig. 6. *Bittium xanthum*, n. sp. 557

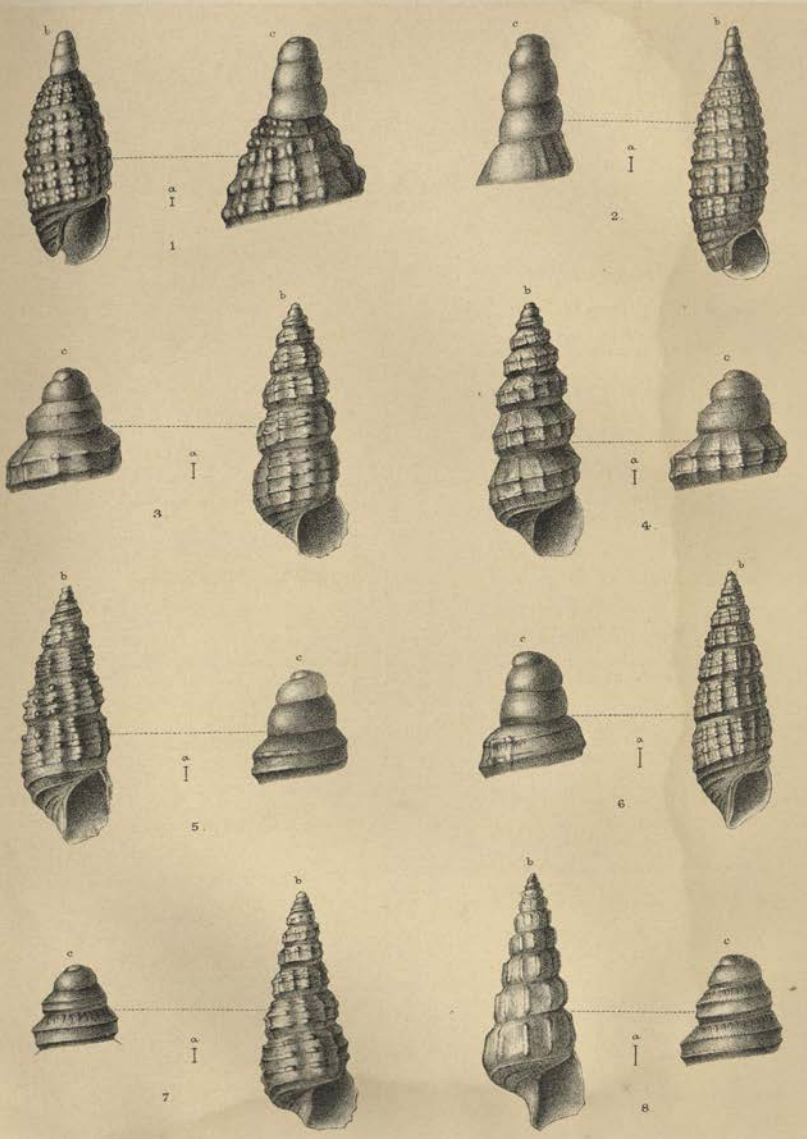
a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 70 diameters.

Fig. 7. *Bittium leucocephalum*, n. sp. 558

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 70 diameters.

Fig. 8. *Bittium porcellanum*, n. sp. 559

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 80 diameters.



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CERITHIOPSIS, BITTIUM.

PLATE XXXIX.

PLATE XXXIX.

PAGE

Fig. 1. *Bittium oosimense*, n. sp. 548

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture, magnified.

Fig. 2. *Bittium gemmatum*, n. sp. 547

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture, magnified.

Fig. 3. *Bittium enode*, n. sp. 541

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture, magnified.

Fig. 4. *Triforis levukensis*, n. sp. 561

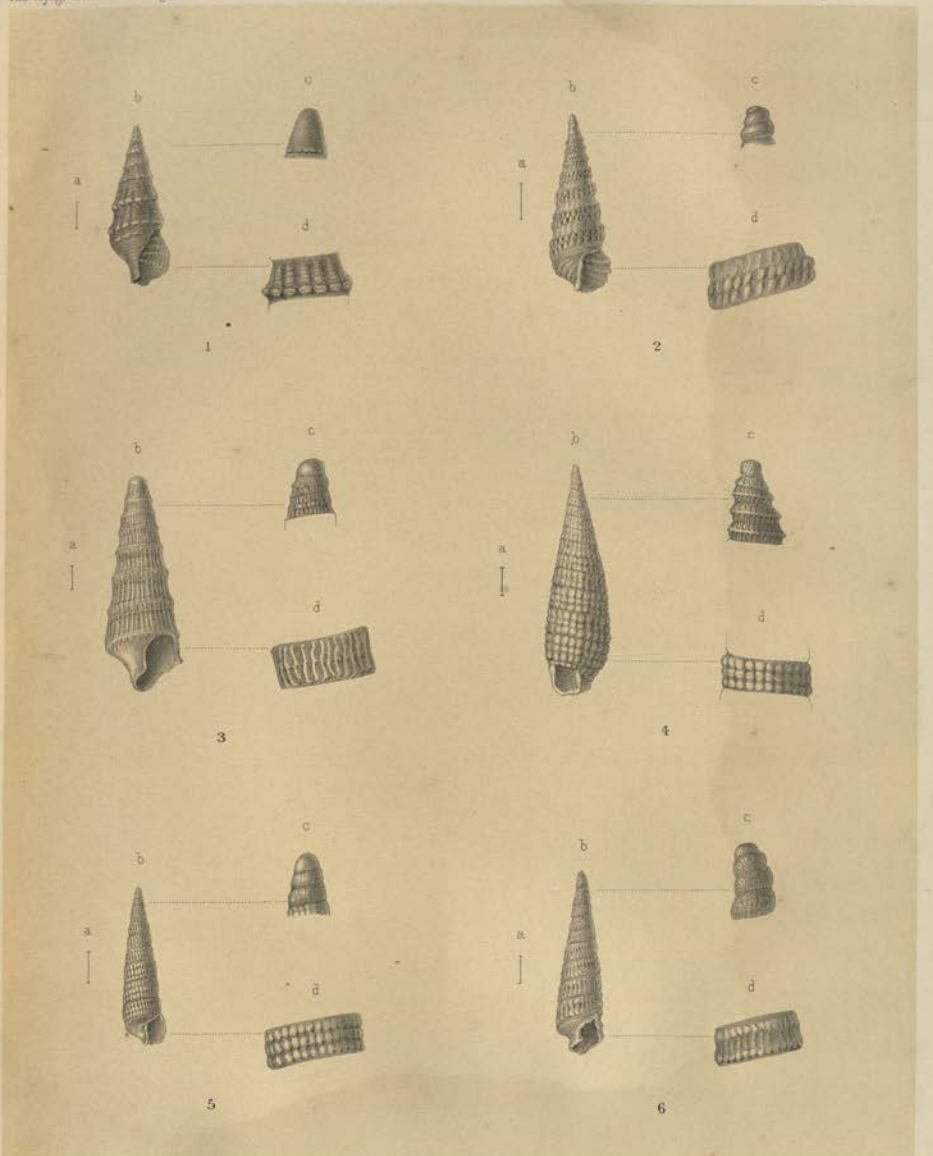
a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture, magnified.

Fig. 5. *Bittium cylindricum*, n. sp. 550

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture, magnified.

Fig. 6. *Bittium amblyterum*, n. sp. 542

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture, magnified.



R. Kidston del.

F. Huth, Lith. Edin.

BITTIUM-TRIFORIS.

PLATE XL.

PLATE XL.

PAGE

Fig. 1. *Triforis inflata*, n. sp. 564

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture, magnified.

Fig. 2. *Cerithium matukense*, n. sp. 533

a, *b*. The shell, natural size; back and front view.
c. The natural size of
d. The apex, enlarged.

Fig. 3. *Cerithium phoxum*, n. sp. 534

a. The natural size.
b, *c*. The shell, enlarged; back and front view.
d. The apex, magnified.

Fig. 4. *Cerithium lissum*, n. sp. 535

a. The natural size,
b, *c*. The shell, enlarged; back and front view.
d. The apex, magnified.

Fig. 5. *Bittium amboinense*, n. sp. 544

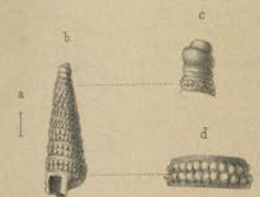
a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified.

Fig. 6. *Bittium mamillanum*, n. sp. 543

a. The natural size of
b. A fragment of the shell, enlarged.

Fig. 7. *Bittium pigrum*, n. sp. 545

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture, magnified.



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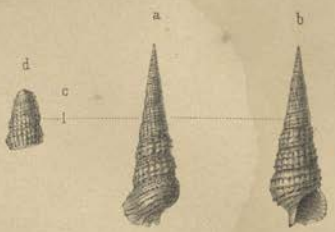

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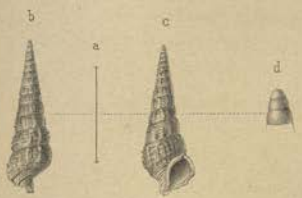

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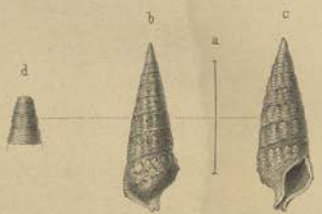

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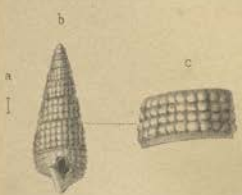

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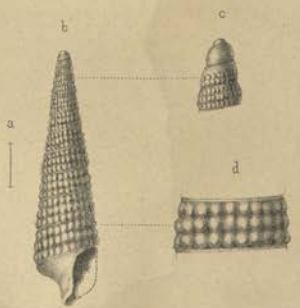

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TRIFORIS, CERITHIUM, BITTIUM.

PLATE XLI.

PLATE XLI.

PAGE

Fig. 1. *Bittium lusciniæ*, n. sp. 545

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture and base, magnified.

Fig. 2. *Bittium philomelæ*, n. sp. 546

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture, magnified.

Fig. 3. *Bittium pupiforme*, n. sp. 548

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture, magnified.

Fig. 4. *Bittium abruptum*, n. sp. 551

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture, magnified.

Fig. 5. *Bittium delicatum*, n. sp. 552

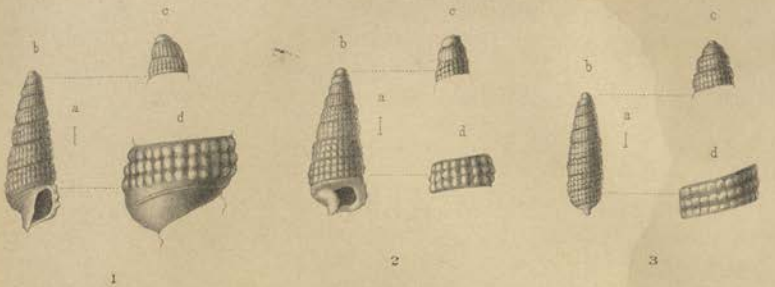
a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture, magnified.

Fig. 6. *Bittium aëdonium*, n. sp. 553

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture, magnified.

Fig. 7. *Alaba* (*Diala*) *limnæiformis*, n. sp. 567

a. The natural size.
b, *c*. The shell, enlarged; front and back view.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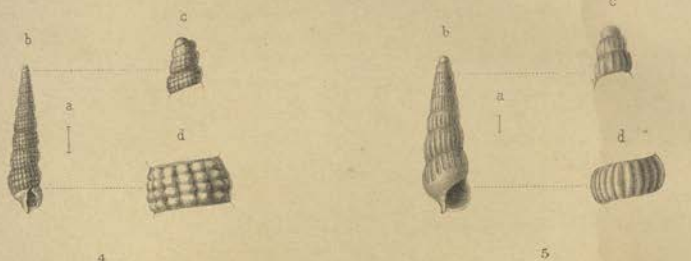
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PLATE XLII.

PLATE XLII.

PAGE

Fig. 1. *Triforis dolicha*, n. sp. 565

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 60 diameters.

Fig. 2. *Triforis rufula*, n. sp. 566

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 60 diameters.

Fig. 3. *Alaba* (*Diala*) *albugo*, n. sp. 568

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 50 diameters.

Fig. 4. *Alaba* (*Stiliferina*) *goniochila*, A. Ad. 569

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 70 diameters.

Fig. 5. *Alaba* (*Stiliferina*) *fulva*, n. sp. 571

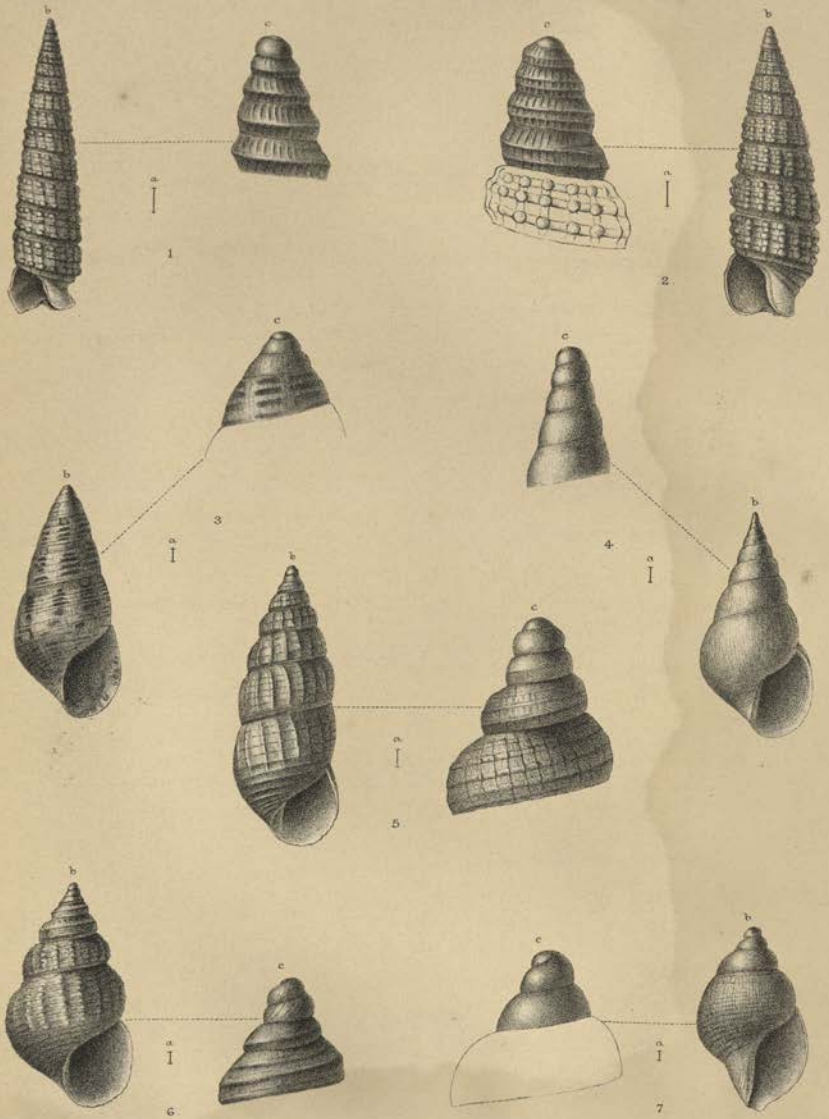
a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 70 diameters.

Fig. 6. *Alaba* (*Stiliferina*) *striata*, n. sp. 569

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 70 diameters.

Fig. 7. *Alaba* (*Stiliferina*) *sulcata*, n. sp. 570

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 50 diameters.



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TRIFORIS, ALABA.

PLATE XLIII.

PLATE XLIII.

PAGE

Fig. 1. *Echinella tectiformis*, n. sp. 578

a. The shell, natural size.
b. The sculpture, magnified.

Fig. 2. *Barleeia imbricata*, n. sp. 584

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 70 diameters.

Fig. 3. *Cithna margaritifera*, n. sp. 580

a. The natural size.
b. The shell, enlarged.
c. The sculpture round the top of the whorls, magnified.

Fig. 4. *Fossarus cereus*, n. sp. 582

a. The natural size.
b, c. The shell enlarged, front and back view.
d. The head of the animal, showing part of the operculum.

Fig. 5. *Jeffreysia edwardiensis*, n. sp. 584

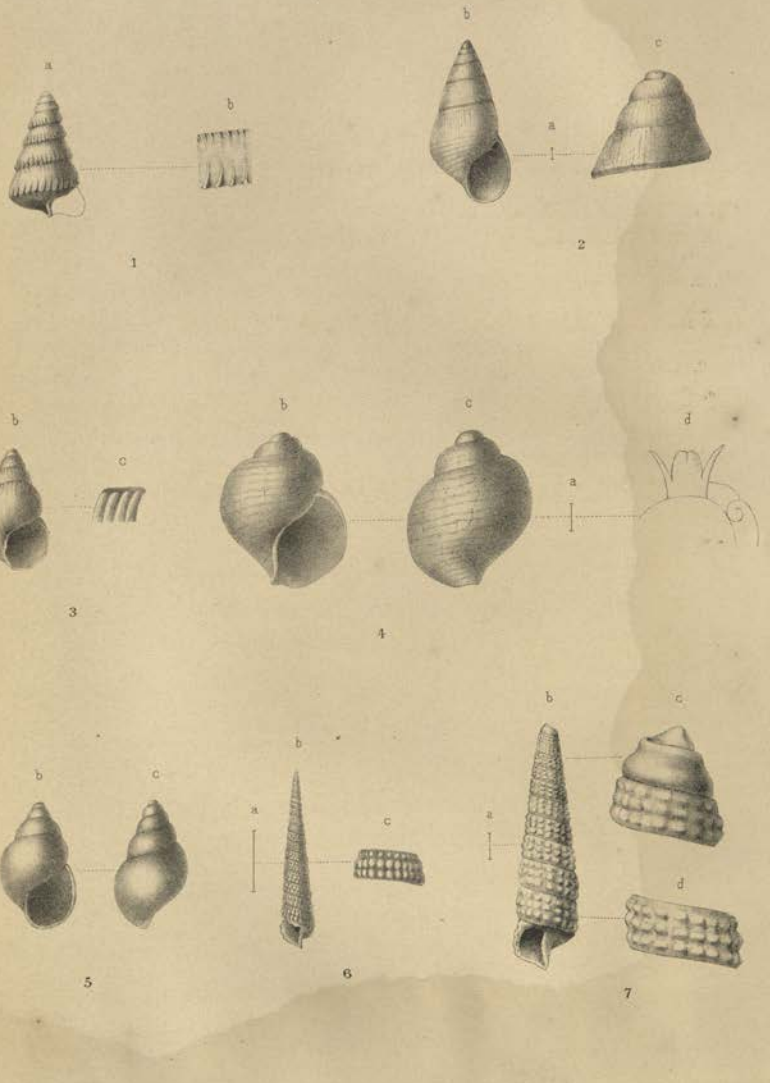
a. The natural size.
b. c. The shell enlarged, front and back view.

Fig. 6. *Triforis bigemma*, n. sp. . . . . 560.

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified.

Fig. 7. *Triforis hebes*, n. sp. 561

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 40 diameters.
d. The sculpture, magnified 20 diameters.



R. Elleton del.

F. Roth, Lith. Edin.

ECHINELLA, BARLEEIA, CITHNA, FOSSARUS, JEFFREYSIA, TRIFORIS.

PLATE XLIV.

PLATE XLIV.

PAGE

Fig. 1. *Rissoa (Alvania) didyma*, n. sp. 594
a. The natural size. | *b.* The shell, enlarged.

Fig. 2. *Rissoa (Alvania) tarsodes*, n. sp. 595
a. The natural size. | *b.* The shell, enlarged.

Fig. 3. *Rissoa (Alvania) lusciniæ*, n. sp. 597
a. The natural size. | *b.* The shell, enlarged.

Fig. 4. *Rissoa pyrrhias*, n. sp. 588
a. The natural size.
b. The shell, enlarged. | *c.* The apex, magnified 70 diameters.

Fig. 5. *Rissoa xanthias*, n. sp. 588
a. The natural size.
b. The shell, enlarged. | *c.* The apex, magnified 70 diameters.

Fig. 6. *Rissoa (Alvania) trajectûs*, n. sp. 596
a. The natural size. | *b.* The shell, enlarged.

Fig. 7. *Rissoa fayalensis*, n. sp. 589
a. The natural size. | *b.* The shell, enlarged.

Fig. 8. *Rissoa amblia*, n. sp. 590
a. The natural size. | *b.* The shell, enlarged.

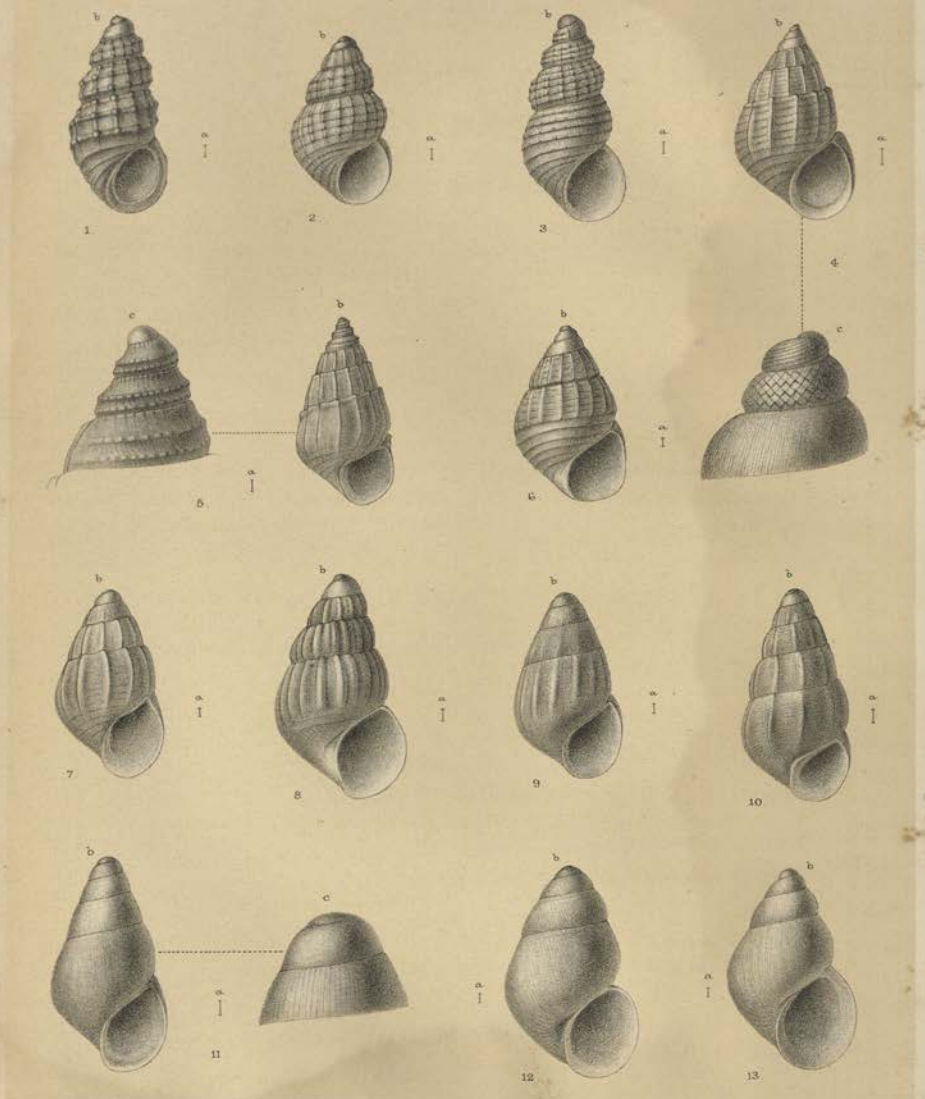
Fig. 9. *Rissoa pernambucensis*, n. sp. 590
a. The natural size. | *b.* The shell, enlarged.

Fig. 10. *Rissoa microstoma*, n. sp. 591
a. The natural size. | *b* The shell, enlarged.

Fig. 11. *Rissoa (Cingula) rustica*, n. sp. 604
a. The natural size.
b. The shell, enlarged. | *c.* The apex, magnified 45 diameters.

Fig. 12. *Rissoa (Setia) marionensis*, n. sp. 607
a. The natural size. | *b.* The shell, enlarged.

Fig. 13. *Rissoa (Setia) principis*, n. sp. 608
a. The natural size. | *b.* The shell, enlarged.



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RISSOA.

PLATE XLV.

PLATE XLV.

PAGE

Fig. 1. *Rissoa (Setia) australis*, n. sp. 608

a. The natural size. | *b.* The shell, enlarged.

Fig. 2. *Rissoa (Setia) philomelæ*, n. sp. 609

a. The natural size. | *b.* The shell, enlarged.

Fig. 3. *Rissoa (Setia) quisquiliarum*, n. sp. 609

a. The natural size. | *b.* The shell, enlarged.

Fig. 4. *Rissoa (Cingula) scopulorum*, n. sp. 605

a. The natural size.
b. The shell, enlarged. | *c.* The apex, magnified.

Fig. 5. *Rissoa (Onoba) aëdonis*, n. sp. 600

a. The natural size.
b. The shell, enlarged. | *c.* The sculpture, magnified.
d. The apex, magnified.

Fig. 6. *Rissoa (Ceratia) glaphyra*, n. sp. 601

a. The natural size. | *b.* The shell, enlarged.

Fig. 7. *Rissoa (Ceratia) pachia*, n. sp. 602

a. The natural size. | *b.* The shell, enlarged.

Fig. 8. *Rissoa (Onoba) brachia*, n. sp. 599

a. The natural size. | *b.* The shell, enlarged.

Fig. 9. *Rissoa (Ceratia) transenna*, n. sp. 603

a. The natural size.
b. The shell, enlarged. | *c.* The apex, enlarged.

Fig. 10. *Rissoa (Ceratia) macra*, n. sp. 603

a. The natural size.
b. The shell, enlarged. | *c.* The sculpture, magnified.

Fig. 11. *Rissoa (Setia) edwardiensis*, n. sp. 610

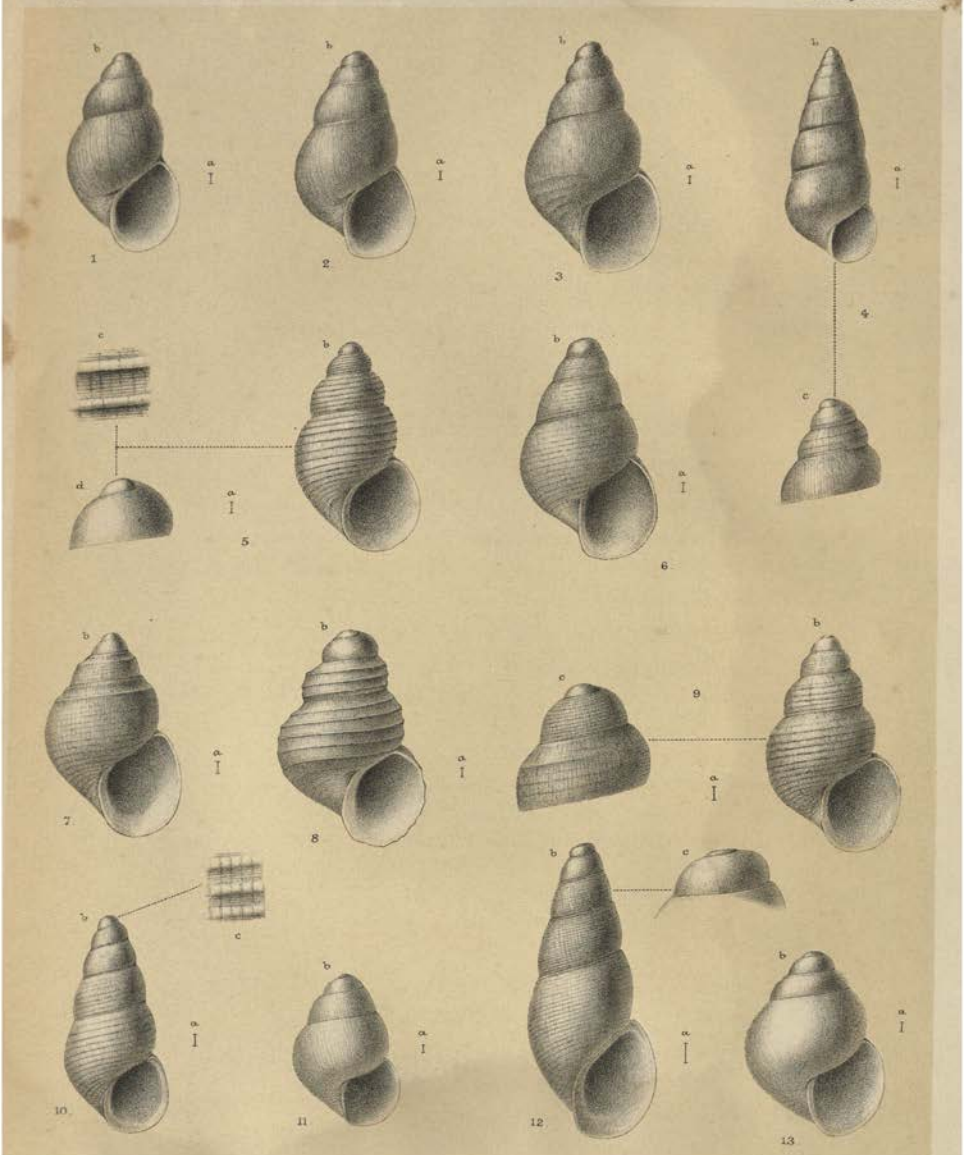
a. The natural size. | *b.* The shell, enlarged.

Fig. 12. *Rissoa (Onoba) mercurialis*, n. sp. 600

a. The natural size.
b. The shell, enlarged. | *c.* The apex, magnified.

Fig. 13. *Rissoa (Setia) sinapi*, n. sp. 610

a. The natural size. | *b.* The shell, enlarged.



RISSOA.

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PLATE XLVI.

PLATE XLVI.

PAGE

Fig. 1. *Rissoa (Cingula) alvearium*, n. sp. 605

a. The natural size. | *b.* The shell, enlarged.

Fig. 2. *Rissoa (Setia) triangularis*, n. sp. 611

a. The natural size. | *b.* The shell, enlarged.

Fig. 3. *Rissoa (Scrobs) badia*, n. sp. 612

a. The natural size. | *b.* The shell, enlarged.

Fig. 4. *Rissoa (Scrobs) scrobiculator*, n. sp. 611

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.

Fig. 5. *Iphitus tuberculatus*, n. sp. 583

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.

Fig. 6. *Rissoina ephamilla*, n. sp. 617

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.

Fig. 7. *Rissoina triangularis*, n. sp. 618

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture, magnified.

Fig. 8. *Rissoina mercurialis*, n. sp. 619

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified.
d. The apex, magnified.

Fig. 9. *Rissoina honoluluensis*, n. sp. 619

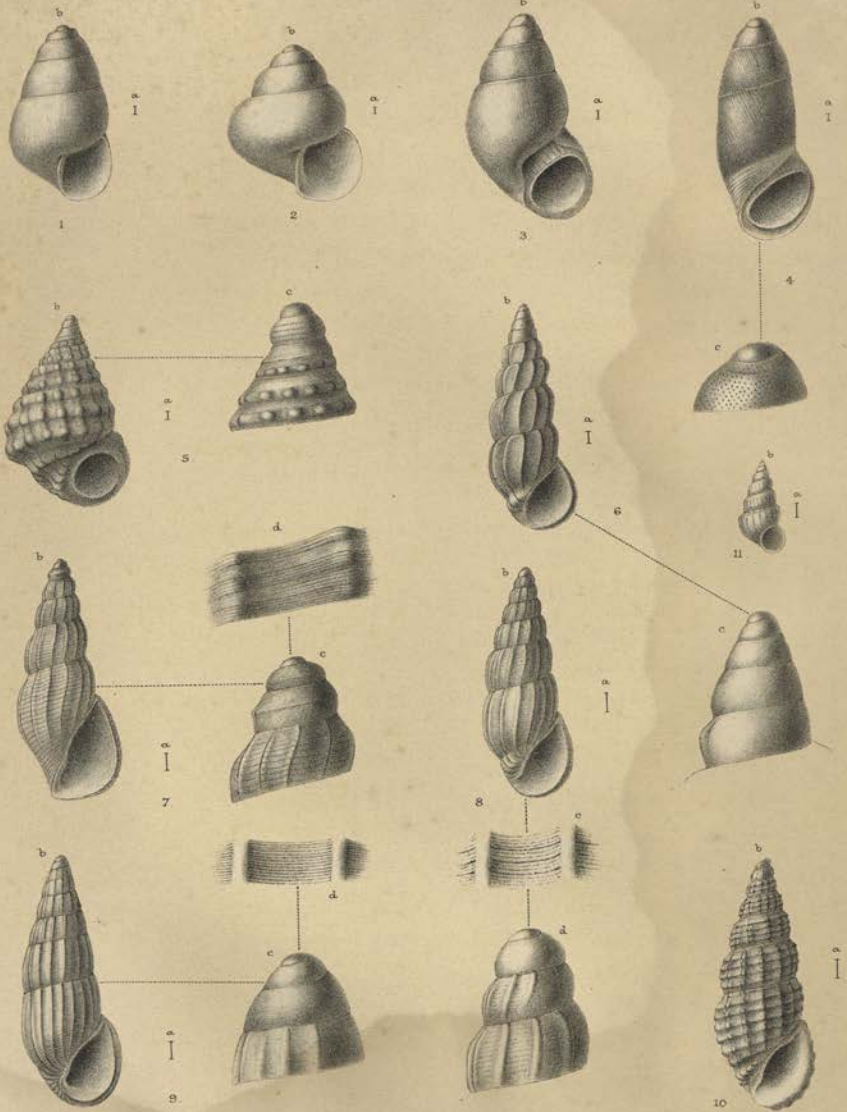
a. The natural size.
b. The shell, enlarged.
c. The apex, magnified.
d. The sculpture, magnified.

Fig. 10. *Rissoina transenna*, n. sp. 620

a. The natural size. | *b.* The shell, enlarged.

Fig. 11. *Scaliola arenosa*, A. Ad. 623

a. The natural size. | *b.* The shell, enlarged.



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RISSOA - IPHITUS - RISSOINA - SCALIOLA.

PLATE XLVII.

PLATE XLVII.

PAGE

Fig. 1. *Actæon turritus*, n. sp. 628

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 35 diameters.

Fig. 2. *Actæon austrinus*, n. sp. 628

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 35 diameters.
d. The sculpture, magnified 35 diameters.

Fig. 3. *Actæon* (*Buccinulus*) *affinis*, A. Adams, enlarged 630

Fig. 4. *Actæon amabilis*, n. sp. 629

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 40 diameters.

Fig. 5. *Actæon* (*Buccinulus*) *cinereus*, n. sp. 631

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 40 diameters.

Fig. 6. *Actæon* (*Actæonina*) *edentulus*, n. sp. 632

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 10 diameters.

Fig. 7. *Actæon* (*Actæonina*) *chariis*, n. sp. 633

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 50 diameters.

Fig. 8. *Ringicula doliaris*, Gould 634

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 40 diameters.

Fig. 9. *Ringicula pusilla*, n. sp. 635

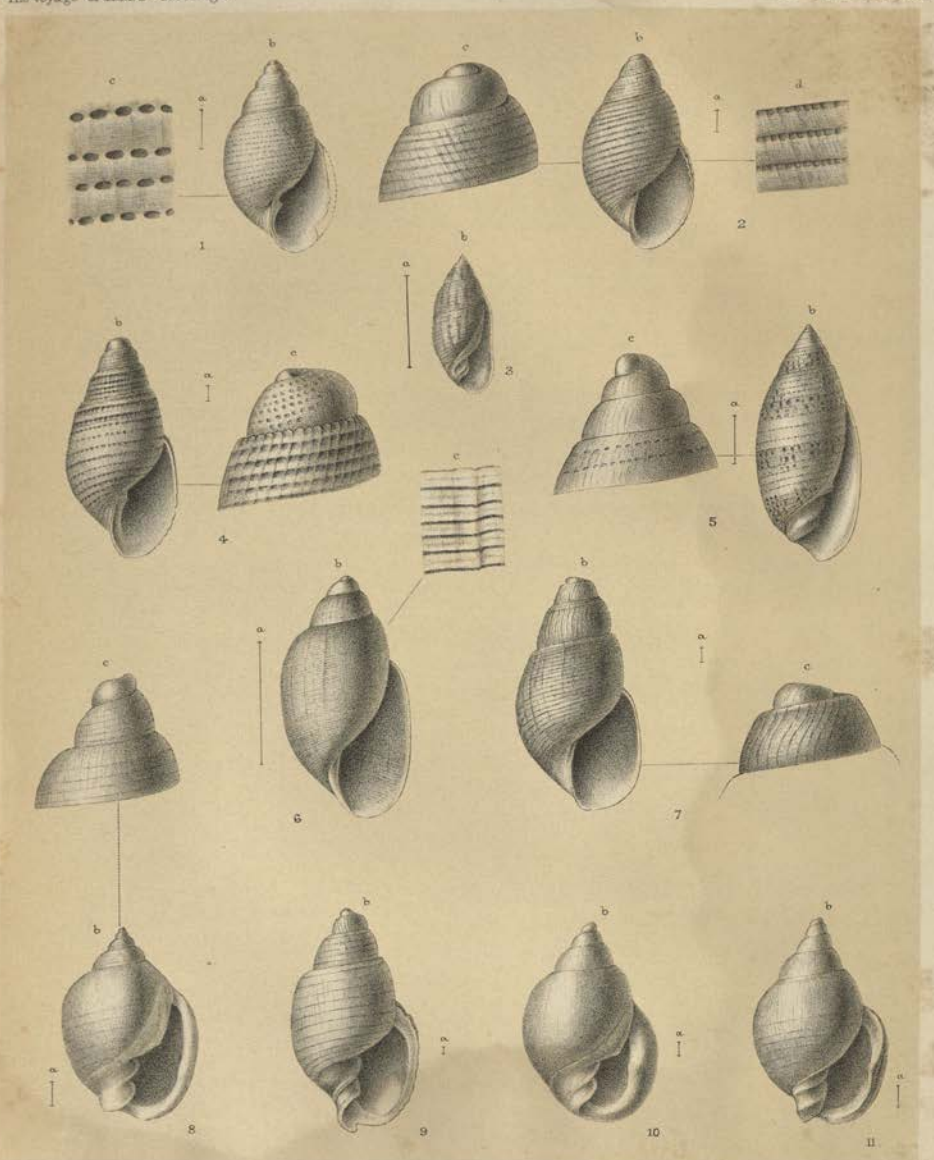
a. The natural size.
b. The shell, enlarged.

Fig. 10. *Ringicula assularum*, n. sp. 635

a. The natural size.
b. The shell, enlarged.

Fig. 11. *Ringicula peracuta*, n. sp. 636

a. The natural size.
b. The shell, enlarged.



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ACTÆON, RINGICULA.

PLATE XLVIII.

PLATE XLVIII.

PAGE

Fig. 1. *Atys hyalina*, n. sp. 640

a. The natural size. | *b*. The shell, enlarged.

Fig. 2. *Scaphander mundus*, n. sp. 643

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 20 diameters.

Fig. 3. *Scaphander niveus*, n. sp. 644

a. The natural size. | *b*. The shell, enlarged.

Fig. 4. *Scaphander gracilis*, n. sp. 645

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 15 diameters.

Fig. 5. *Amphisphyra seguenzæ*, n. sp. 646

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 40 diameters.

Fig. 6. *Utriculus*, n. sp. 648

a. The natural size. | *b*. The shell, enlarged.

Fig. 7. *Utriculus spatha*, n. sp. 649

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 12 diameters.
d. The sculpture on the spire, magnified 70 diameters.
e. The sculpture in the middle of the shell, magnified 70 diameters.

Fig. 8. *Utriculus leucus*, n. sp. 649

a. The natural size. | *b*. The shell, enlarged.

Fig. 9. *Utriculus complanatus*, n. sp. 650

a. The natural size. | *b*. The shell, enlarged.

Fig. 10. *Utriculus tornatus*, n. sp. 651

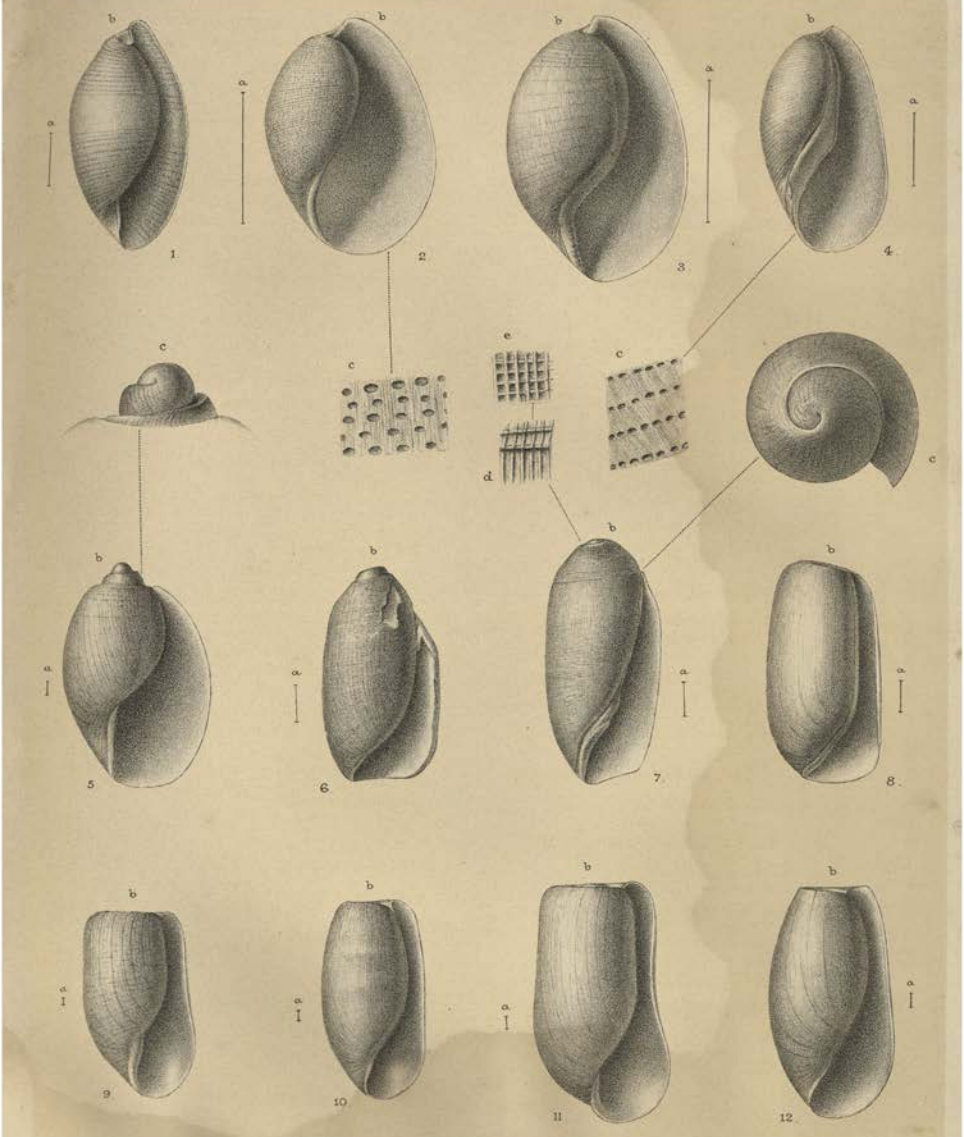
a. The natural size. | *b*. The shell, enlarged.

Fig. 11. *Utriculus amphizostus*, n. sp. 652

a. The natural size. | *b*. The shell, enlarged.

Fig. 12. *Utriculus oryctus*, n. sp. 653

a. The natural size. | *b*. The shell, enlarged.



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ATYS. SCAPHANDER. AMPHISPHYRA. UTRICULUS.

PLATE XLIX.

PLATE XLIX.

PAGE

Fig. 1. *Utriculus famelicus*, n. sp. 653

a. The natural size. | *b.* The shell, enlarged.

Fig. 2. *Utriculus simillimus*, n. sp. 654

a. The natural size.
b. The shell, magnified. | *c.* The apex, magnified 40 diameters.

Fig. 3. *Utriculus* (*Tornatina*) *leptekes*, n. sp. 656

a. The natural size.
b. The shell, enlarged. | *c.* The apex, magnified 30 diameters.

Fig. 4. *Utriculus* (*Tornatina*) *acrobeles*, n. sp. 657

a. The natural size.
b. The shell, enlarged. | *c.* The apex, magnified 30 diameters.

Fig. 5. *Utriculus* (*Tornatina*) *avenarius*, n. sp. 658

a. The natural size.
b. The shell, enlarged. | *c.* The apex, magnified 13 diameters.

Fig. 6. *Utriculus* (*Tornatina*) *aratus*, n. sp. 658

a. The natural size. | *b.* The shell, enlarged.

Fig. 7. *Utriculus* (*Tornatina*) *amboinensis*, n. sp. 659

a. The natural size. | *b.* The shell, enlarged.

Fig. 8. *Utriculus* (*Tornatina*) *pachys*, n. sp. 650

a. The natural size. | *b.* The shell, enlarged.

Fig. 9. *Cylichna ovata*, Jeffreys 664

a. The natural size. | *b.* The shell, enlarged.

Fig. 10. *Cylichna discus*, n. sp. 664

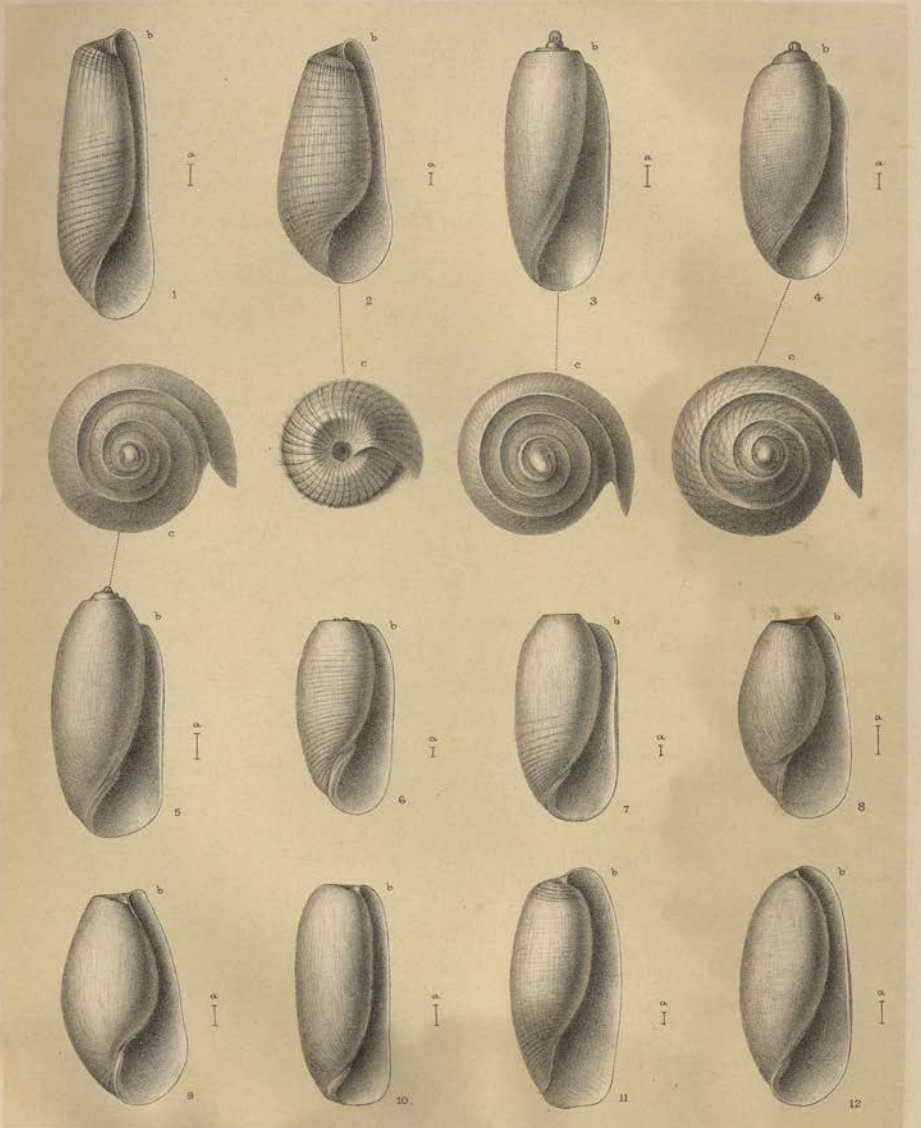
a. The natural size. | *b.* The shell, enlarged.

Fig. 11. *Cylichna tahitiensis*, n. sp. 665

a. The natural size. | *b.* The shell, enlarged.

Fig. 12. *Cylichna crispula*, n. sp. 666

a. The natural size. | *b.* The shell, enlarged.



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UTRICULUS. CYLICHNA.

PLATE L.

PLATE L.

PAGE

Fig. 1. *Cylichna noronyensis*, n. sp. 666

a. The natural size.
b. The shell, enlarged.
c. The apex, magnified 30 diameters.

Fig. 2. *Cylichna reticulata*, n. sp. 667

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 70 diameters.

Fig. 3. *Cylichna subreticulata*, n. sp. 668

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 50 diameters.

Fig. 4. *Cylichna labiata*, n. sp. 669

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 70 diameters.

Fig. 5. *Cylichna* (*Volvula*) *paupercula*, n. sp. 669

a. The natural size.
b. The shell, enlarged.
c. The sculpture, magnified 70 diameters.

Fig. 6. *Cylichna* (*Volvula*) *sulcata*, n. sp. 670

a. The natural size.
b. The shell, enlarged.

Fig. 7. *Dolabrifera triangularis*, n. sp. 673

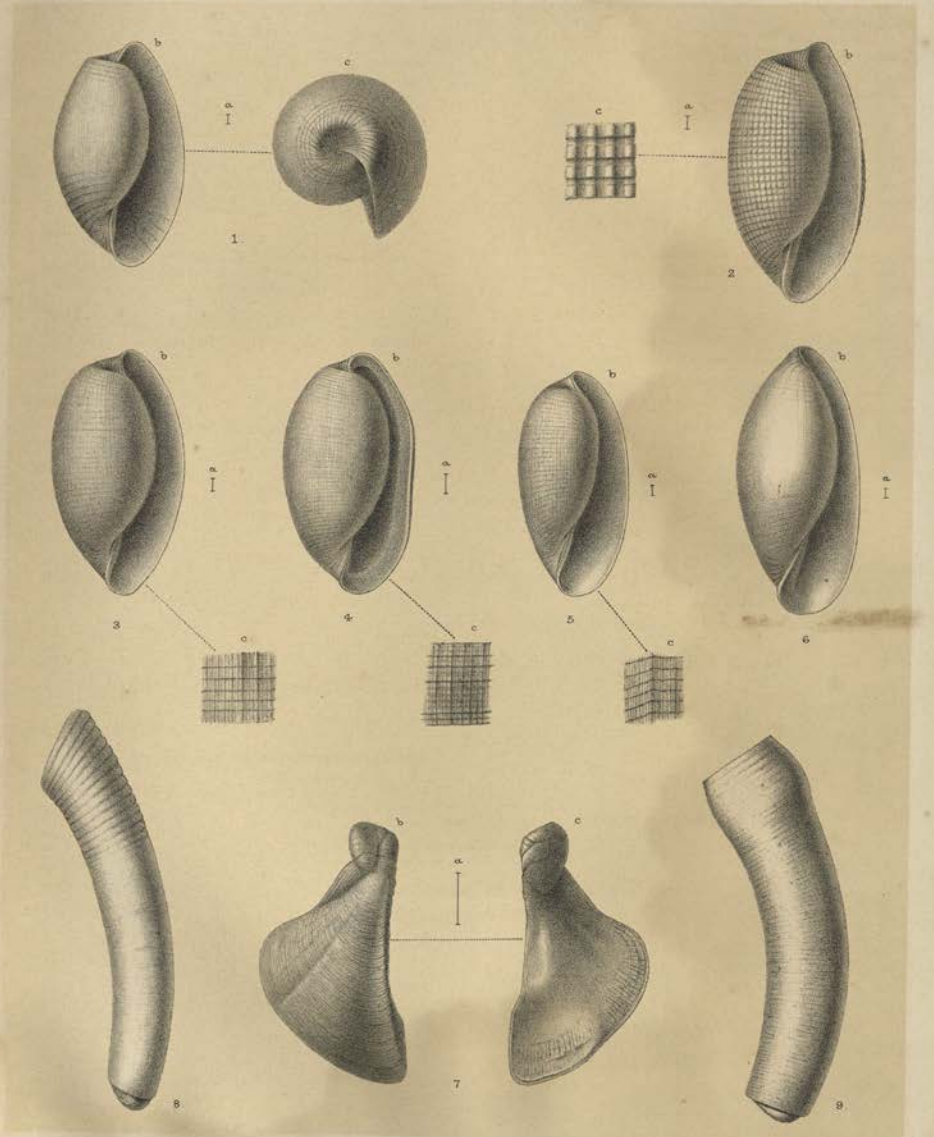
a. The natural size.
b. The convex face.
c. The concave face of the same, enlarged.

Fig. 8. *Cæcum angustum*, n. sp., de Folin 688

The shell, magnified 50 diameters.

Fig. 9. *Cæcum eburneum*, n. sp., de Folin 688

The shell, magnified 40 diameters.



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CYLICHNA, DOLABRIFERA, CÆCUM.

CÆCIDÆ—PLATE I.

PLATE I.

PAGE

Fig. 1. *Parastrophia challengeri*, de Folin, n. sp. 681

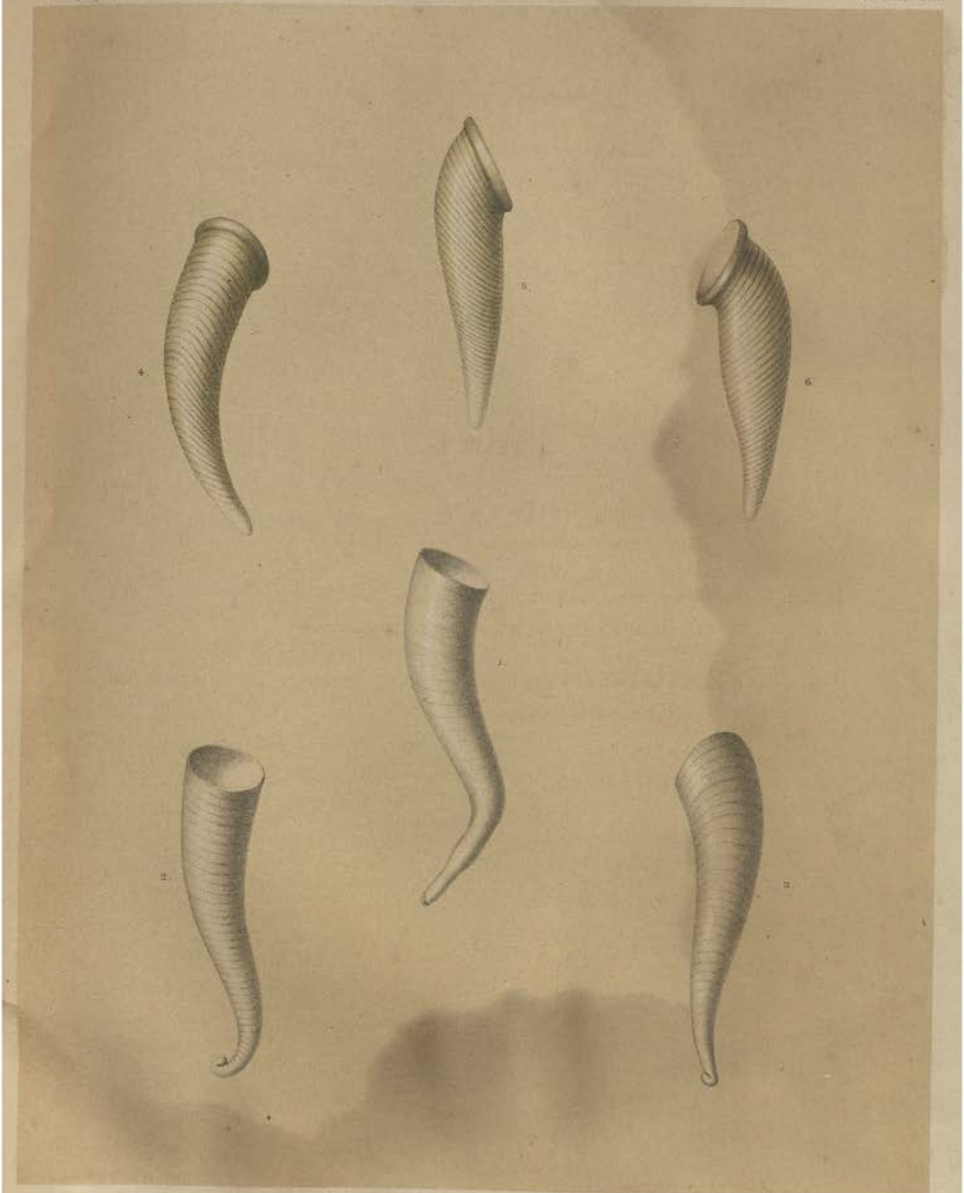
The shell, magnified 30 diameters.

Figs. 2, 3. *Streblocerας subannulatum*, de Folin, n. sp. 682

The shell seen in front and in back, magnified 25 diameters.

Figs. 4–6. *Watsonia elegans*, de Folin, n. gen. and sp. 682

The shell, magnified 25 diameters.



Autor del. Dr. J. Hellmann lith.

PARASTROPHIA. SHEBLOCERAS. WATSONIA.

K.k.Hof- u. Staatsdruckerei Wien.

CÆCIDÆ—PLATE II.

PLATE II.

PAGE

Fig. 7. *Cæcum lineicinctum*, de Folin, n. sp. 683

The shell, magnified 25 diameters.

Fig. 8. The same, showing the septum of the apex, still more enlarged . . 683

Fig. 9. *Cæcum attenuatum*, de Folin, n. sp. 684

The shell, magnified 40 diameters.

Figs. 10, 11. The same, showing the septum, still more enlarged . . . 684

Fig. 12. *Cæcum*, n. sp., de Folin, magnified 40 diameters 684

Fig. 13. *Cæcum subflavum*, de Folin, magnified 30 diameters . . . 685

Fig. 14. The same, showing the septum, still more enlarged . . . 685

Autor del. Dr. J. Heitzmann 3th.

K.k. Hof- u. Staatsdruckerei Wien.

CÆCUM

CÆCIDÆ—PLATE III.

PLATE III.

PAGE

Fig. 15. *Cæcum succineum*, de Folin, n. sp. 685

The shell, magnified 30 diameters.

Fig. 16. The same, showing the septum, still more enlarged . . . 685

Fig. 17. *Cæcum microcyclus*, de Folin, n. sp. 686

The shell, magnified 35 diameters.

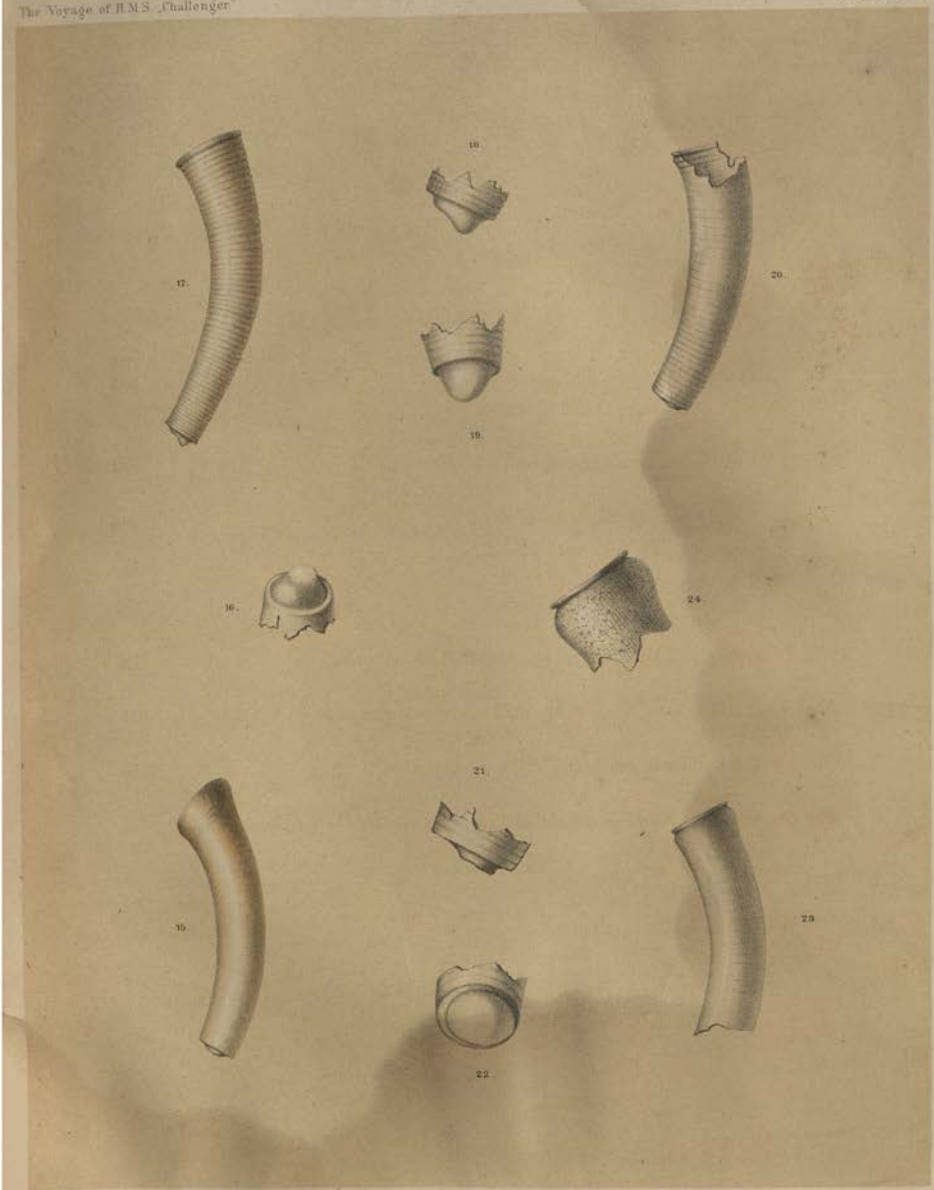
Figs. 18, 19. The same, showing the septum, still more magnified . . 686

Fig. 20. *Cæcum exile*, de Folin, n. sp., magnified 35 diameters . . . 687

Figs. 21, 22. The same, showing the septum, still more magnified . . 687

Fig. 23. *Cæcum crystallinum*, de Folin, n. sp. magnified 687

Fig. 24. The same, showing the contraction and reflection of the lip, still more magnified 687



Aufsr. del. Dr. J. Heitzmann lith.

K. k. Hof- u. Staatsdruckerei Wien.

CÆCUM

THE

VOYAGE OF H.M.S. CHALLENGER.

ZOOLOGY.

REPORT on the POLYPLACOPHORA collected by H.M.S. CHALLENGER during the years 1873–76. By ALFRED C. HADDON, M.A., M.R.I.A., Professor of Zoology, Royal College of Science, Dublin.

INTRODUCTION.

THE number of specimens of the Polyplacophora, or Chitons, collected by the Challenger Expedition was very small, considering the frequency and wide distribution of the group. This is to be accounted for by the fact that the majority of Chitons are strictly littoral in their habit, and the Expedition occupied itself mainly with deep-sea dredging. About eighty specimens were collected, which are referable to fifteen genera and thirty species, of which seven were previously undescribed, and others, though described, had not been figured.

The really deep-sea Chitons all belong to the genus *Leptochiton*, and, judging from their sculpture, they are closely related forms. *Leptochiton alveolus*, Sars, which may be taken as the type of this series, occurs off the west coast of Norway at from 150 to 420 fathoms, and has also been dredged from 220 fathoms in the Gulf of St Lawrence, from 150 fathoms in the Gulf of Maine, and northwards along the east coast of North America beyond New England waters, from 99 to 640 fathoms, a region which is swept by Arctic currents. *Leptochiton belknapi*, Dall, has been dredged from 1006 fathoms (bottom temperature 35°·5 F.) in the North Pacific, near the Aleutian Islands, and by the Challenger Expedition off Cape Bolinas, Luzon, Philippine Islands from 1050 fathoms (bottom temperature 37°). Another allied species, *Leptochiton benthus*, n. sp., also from the North Pacific, 15° north of Hawaii, Sandwich Islands, from 2300 fathoms (red clay, bottom temperature 35°·1), attains the greatest depth which has hitherto been recorded for any

Chiton. The third example of this genus collected by the Expedition is *Leptochiton kerguelensis*, n. sp., from Royal Sound, Kerguelen, at a depth of 60 fathoms (bottom temperature 40°). *Leptochiton cancellatus*, Sow., which is a coast and comparatively shallow water form of Northern Europe, being found down to a depth of 300 fathoms off Lofoten, extends from Vigo, Spain, to Greenland, and off the Canadian coast in the North Atlantic down to 300 fathoms. Dall also dredged it at Alaska in from 6 to 100 fathoms. Thus *Leptochiton* may claim to be an Arctic or north temperate genus, which also ranges to great depths, at least in the North Pacific.

Another Leptoid genus, *Hanleyia*, also appears to flourish better in colder waters. *Hanleyia debilis*, Gray, is found in British seas northwards. Sars dredged it near North Cape in from 25 to 300 fathoms, and the U.S. Fish Commission in Massachusetts Bay, from 38 fathoms. *Hanleyia mendicaria*, Migh. and Ad., occurs at Casco Bay; Grand Manon; Portland Harbour, Maine, the deep water specimens being much larger than those from shallow water. *Hanleyia* (?) *abyssorum*, Sars, comes from 150 to 200 fathoms off Bergen, Norway. *Hanleyia tropicalis*, Dall MS., is a large and beautiful species from 128 fathoms, Sand Key in the Gulf of Mexico (Dall). The allied genus *Hemiarthrum* has only one species, *Hemiarthrum setulosum*, Carp., which the Expedition collected from the shore of Kerguelen Island.

Of other Chitons from moderately deep water the following may be noted: *Chætopleura apiculata*, Say, from 100 miles S.E. of Martha's Vineyard, Mass., at 210 fathoms (bottom temperature 40°·5 F.), Dall, Proc. U.S. Nat. Mus., 1882, p. 410. The Expedition dredged *Lepidopleurus dorsuosus*, n. sp., at 310 fathoms off Prince Edward's Island, and *Lepidopleurus dallii*, n. sp., off South Chili from 400 fathoms (bottom temperature 46°·5); *Plaxiphora carmichaelis*, Gray, 345 fathoms, South-West Chili (bottom temperature 46°), and *Plaxiphora simplex*, Carp. MS., was collected on the shore and dredged from 110 fathoms at Tristan da Cunha. Several species of the genus *Trachydermon* and other genera occur at low water and at moderate depths down to about 100 fathoms.

The general distribution of the shore Chitons is now fairly well known, and the specimens collected by the Expedition present us with no new features of interest.

This Report, however, brings out still more prominently the necessity of a large number of specimens being collected from as many localities as possible. In some groups especially there is a great tendency to individual variation, so that an unnecessary number of new species have been described, or, at all events, they have been so described as to mask their real affinities. In order to solve the problems of Geographical Distribution, and to learn the true lesson of the variability of species, it is indispensable to compare large series of specimens, and, while accurately noting and tabulating varieties, to be very careful about describing them as species. For the sake of convenience, well characterised or locally restricted varieties may advantageously receive some varietal designation, and it would be preferable if this could convey some reference to the type or central form. If

this could be satisfactorily accomplished the all-important analytical method would not overwhelm the synthetical, as it has been too often allowed to do by systematic zoologists. The forms which are associated with the names of *Acanthopleura picea*, *Acanthopleura spiniger*, and *Acanthopleura incana*, illustrate this point very forcibly.

The critical study of local varieties will lead to valuable results, and is a vastly better employment than the indiscriminate description of so-called "new species."

Various conchologists have attempted to collect the species of Chitons into consistent genera and greater groups, the last and best essay in this direction being that of the late Dr P. P. Carpenter of Montreal, who unfortunately died before he was able to publish his monograph. The more salient features of Dr Carpenter's system have been given by Mr W. H. Dall of Washington, in two valuable papers On the Scientific Results of the Exploration of Alaska, Article IV., Report on Chitons,[1] and On the Genera of Chitons.[2]

It would necessitate the comparison of a greater range of species than occurs in the collection to enter into a profitable critical discussion concerning the correctness of the main ideas in Carpenter's classification. It should be remembered that as a systematic conchologist he regarded the classification of Mollusca from a somewhat different standpoint from that of the modern school of morphologists, and his aim was to frame a scheme which would indicate the general relationship of forms, and which was based upon characters readily observed even in dried specimens. Although this necessarily limits the field of comparison, a great deal can be said in its favour for practical purposes, as, to take a definite example, it is manifestly impossible for those who have charge of public collections to dissect or mutilate specimens for an anatomical investigation, even had they the time or did the material permit of it. The systematic zoologist can only take certain patent characters for taxonomic purposes; it is the duty of the morphological zoologist to test these eclectic characters by all the means of his research. A true conception of the affinity of forms can only be reached by a nicely balanced appreciation of all the characters, and it is upon such that any classification must be based which will have any permanent value.

I had hoped to include in this report a sufficient account of the anatomy of the group which would enable us to test the value of Carpenter's classification. Although I have made some progress towards this end, various circumstances have prevented it from being here carried out. The species collected by the Challenger Expedition are not sufficiently representative for that purpose, and I have not yet had time to work out the supplementary material kindly placed at my disposal by Mr Dall. In the meantime, I adopt in the main Carpenter's classification and terminology.

In this report the species will be treated from a purely systematic point of view, and only those characters which are of ordinary taxonomic importance will be noted.

I have employed the terminology in general use, and have added but one new term.

[1] *Proc. U.S. Nat. Mus.*, 1878. [2] *Proc. U.S. Nat. Mus.*, 1881.

The shell consists of eight valves, of which the anterior and posterior invariably differ from the six intermediate valves; the anterior portion of the last valve resembling the central areas of the intermediate valves, while its posterior portion resembles the anterior valve; this valve is thus naturally divided into an anterior area and a posterior area. The intermediate valves are similarly divisible into two areas, the central area and the lateral area. The former extends along the whole length of the ridge of the valve down to the lateral border. The surface markings of the median dorsal line or jugum usually differ somewhat from those of the lateral aspects of the central area, and for these areas I propose and have adopted the term *pleura* (from πλευρόν, τό, in plural, the ribs, side). Each central area thus consists of a median jugum and a pair of pleura. The coloration of the area is occasionally different in the two regions. The apex or umbo is the posterior termination of the jugum, and rising more or less close to it, the lateral areas of the intermediate valve diverge obliquely forwards. The surface marking of the lateral areas of these valves usually closely resembles that of the anterior valve, and the posterior area of the posterior valve.

In this report I have adhered to the principle of describing the direction of the various kinds of ornamentation in terms which bear relation to the animal as a whole. Thus, longitudinal and transverse apply to the length and breadth of the animal, and the length of an intermediate valve is its antero-posterior axis. Radiating markings are naturally those which diverge from the umbo to the periphery.

The exposed or upper surface of the shell is the tegmentum, which differs markedly in its appearance and structure from the under surface. Although intimately connected together, it is convenient to regard the shell as composed of two concentric and quite distinct portions, the upper or tegmentum forming a cap which leaves the edges of the lower or articulamentum more or less exposed. The tegmentum is raised above the articulamentum, and at its periphery it usually more or less projects over the articulamentum, forming the eaves or subgrundæ. There is great diversity in the relative development of these two layers of the shell, the articulamentum being most rudimentary in the Leptoidea and having its maximum development in the Chitonelloidea.

The articulamentum is in the intermediate and posterior valves produced anteriorly into a pair of broad thin plates, the sutural laminæ, the bay between them being the jugal sinus (*sinus jugalis*). The lateral border of the articulamentum of the intermediate valves is indented by a distinct notch, the lateral slit which demarcates the anterior from the lateral insertion plates or side laminæ of insertion. These are absent only in the Leptoidea and Chitonelloidea. Except in the Leptoidea, the articulamentum of the anterior valve always more or less projects, and is slit or notched, forming a variable number of teeth; the same occurs for the posterior border of the last valve except in the Leptoidea, Schizoidea, Placiphoroidea, and Chitonelloidea.

There is, as a rule, a considerable range of variation in the relative development of the

parts of the valve, number of slits, &c., even in closely allied forms; thus care must be taken not to lay too great stress on any one series of characters.

The shell is more or less imbedded in and entirely surrounded by the girdle or zona, the upper surface of which is variously covered with scales, spines, bristles, hair, or down. The nature of the girdle forms a valuable auxiliary for systematic purposes, as the character of the covering is usually very constant in the different groups. In certain genera, groups or even large tufts of spines or bristles are placed in pairs near the sutures between the valves, and there are usually two on each side round the anterior valve, making a total of nine pairs of tufts; the tufts arise from depressions in the surface of the girdle, which are termed pores: in *Acanthochiton*, for example, these pores are often very deep pits. The terms which are employed to indicate the different kinds of girdle armature merely have reference to their appearance, and have no morphological significance; all of them have a chitinous matrix, which is more or less completely infiltrated by calcareous salts. The under surface of the girdle is characterised by possessing delicate elongated flat scales.

Another character which is worthy of notice is the number and extent of the gills; these are fewest in number in the Leptoidea, and reach their maximum development in the Lophyroidea, Acanthoidea, and in the higher Ischnoidea.

Professor Moseley has suggested the utilisation of the arrangement of the megalopores and micropores of the shell for classificatory purposes. My researches on the structure of the shells are not at present sufficiently complete to enable me to test the accepted divisions of the group by this means. The histological structure of the tegmentum and the distribution of the dermal processes (megalæsthetes and micræsthetes of Moseley) will, however, prove of the greatest value and interest.

I must take this opportunity of acknowledging my great indebtedness to my friends Mr W. H. Dall, of the Smithsonian Institution, Washington, and to Mr E. A. Smith, of the British Museum, who have at all times given me the benefit of their experience. To the former I am further indebted for being permitted to examine Dr Carpenter's MS., which Mr Dall has in his possession, and for the gift of several rare species of Chitons.

The collection of Chitons was first forwarded to the Rev. R. Boog Watson, who had named a few of them, and to whom I am indebted for some valuable clues.

I have taken the following table from Dall's paper On the Genera of Chitons, to serve as a key to the genera mentioned in this report, without however committing myself to its entire acceptance, as it is better to leave the table as it stands than to make alterations which would only be partial and incomplete. In the case of the Leptoidea only have I given a synopsis of the genera of the group. Its introduction serves to elucidate the concluding remarks concerning the probable line of differentiation within the order.

TABLE OF THE GENERA OF RECENT CHITONS.

ORDER POLYPLACOPHORA.

SECTION I.—CHITONES REGULARES.

Head and tail plates similarly articulated.

A.—LEPTOIDEA.

Insertion plates obsolete, or, if present, unslit.

Leptochiton, Gray.
  a. *Deshayesiella*, Carp.
Hanleyia, Gray.
Hemiarthrum, Carp.
Microplax, Adams and Angas.

B.—ISCHNOIDEA.

Insertion plates sharp, smooth, fissured; with eaves.

**No pores on girdle.*

Trachydermon, Carp.
  a. *Trachyradsia*, Carp.
Callochiton, Gray.
  a. *Stereochiton*, Carp.
Tonicella, Carp.
Schizoplax, Dall.
Leptoplax, Carp.
Chætopleura, Shuttleworth.
  a. *Maugerella*, Carp.
Spongiochiton, Carp.
Ischnochiton, Gray.
  a. *Stenoplax*, Carp.
  b. *Stenoradsia*, Carp.
  c. *Ischnoplax*, Carp.
  d. *Heterozona*, Carp.
  e. *Ischnochiton*, Carp., s.s.
  f. *Ischnoradsia*, Shuttleworth.
  g. *Lepidopleurus*, Carp.
  h. *Lepidoradsia*, Carp.
Callistochiton, Carp.

***With girdle-pores.*

Callistoplax, Carp.
Angasia, Carp.
Newcombia, Carp.
Ceratozona, Dall.
Pallochiton, Dall.

C.—LOPHYROIDEA.

Insertion plates broad, pectinated, projecting backward.

Chiton, Linné.
  a. *Radsia*, Gray.
Tonicia, Gray.
  a. *Fannettia*, Dall.
Eudoxochiton, Shuttleworth.
Craspedochiton, Shuttleworth.

D.—Acanthoidea.

Insertion plates thrown forward.

**Plates broad, pectinated (Acanthoidea lophyroidea).*

Sclerochiton, Carp.

***Plates sharp, grooved outside (Acanthoidea typica).*

Acanthopleura, Guilding.
- a. *Lucilina*, Dall.
- b. *Corephium*, Gray.
- c. *Francisia*, Carp.

****Plates sharp, smooth (Acanthoidea ischnoidea).*

Dinoplax, Carp.
Middendorffia, Carp.
- a. *Beanella*, Dall.

Nuttallina, Carp.
Arthuria, Carp.
Phacellopleura, Guilding.

Section II.—CHITONES IRREGULARES.

Tail plate abnormal, or with a sinus behind.

E.—Schizoidea.

Tail valve fissured.

Lorica, H. and A. Adams.
- a. *Aulacochiton* (Shuttleworth), Carp.

Schizochiton, Gray.

F.—Placiphoroidea.

Tail valve unslit, internally ridged, mucro nearly terminal.

Enoplochiton, Gray.
Ornithochiton, Gray.

Placiphora, Gray.
- a. *Fremblya*, H. Adams.
- b. *Euplaciphora*, Shuttleworth.
- c. *Guildingia*, Carp.

G.—Mopaloidea.

Tail valve with posterior sinus and one slit on each side.

Mopalia, Gray.
- a. *Placiphorella*, Carp.

Katherina, Gray.

Acanthochiton (Leach), Herrm.
- a. *Macandrellus*, Carp.
- b. *Stectoplax*, Carp.

Notoplax, H. Adams.

H.—Cryptoidea.

With double sutural laminæ.

Cryptoconchus, Blainville.
Amicula, Gray.
a. *Amicula* Dall, s.s.
b. *Chlamydochiton* Dall.

Cryptochiton, Gray and Middendorff.

I.—Chitonelloidea.

Tail plate funnel-shaped. Laminæ thrown forward.

Chitonellus, Blainville.
a. *Cryptoplax*, Gray.

Choneplax, Carp.
a. *Chitoniscus*, Carp.

DESCRIPTIONS OF GENERA AND SPECIES.

ORDER POLYPLACOPHORA.

SECTION I.—CHITONES REGULARES. Regular Chitons.

Head and tail plates of similar character.

A.—LEPTOIDEA.

Insertion plates obsolete, or, if present, unslit.

Leptochiton.—Insertion plates absent; sinus simple, smooth, deep, not laminated; girdle with minute gravelly, smooth or striated scales; gills, short, posterior. (*Leptochiton cancellatus*, Sow.)

Deshayesiella.—Shell elongated; valves curved, pointing forwards; umbo flattened; insertion plates absent; sinus simple, broad; sutural laminæ triangular; girdle with spicules and chaffy scales. (*Deshayesiella curvatus*, A. Ad.)

Hanleyia.—Insertion plate only in anterior valve, rugose but non-denticulate; eaves minute; sinus simple, broad, shallow; girdle with hairs or fine spines, lateral tufts small. (*Hanleyia debilis*, Gray.)

Hemiarthrum.—Insertion plates only in anterior and posterior valves; smooth unslit laminæ; minute eaves; broad spongy sinus; girdle solid, downy, poriferous, lateral tufts small; gills short. (*Hemiarthrum setulosum*, Carp.)

Microplax.—Insertion plates present in all the valves; smooth unslit laminæ; no eaves; sinus obsolete; girdle, thin, horny, finely granulous. (*Microplax grayi*, Ad. and Ang.)

Genus *Leptochiton*, Gray.

"Lamina insertionis nullis; zona minutissime sabulosa; sinus lævis; haud laminatus; branchiæ breves" (Dall).

Leptochiton benthus,[1] n. sp. (Pl. I. fig. 1; Pl. II. figs. 1*a*–1*m*).

Habitat.—Station 241. June 23, 1875. Lat. 35° 41′ N., long. 157° 42′ E. 2300 fathoms. Red clay. Bottom temperature 35°·1.

Shell.—Delicate, brittle, surface with minute inconspicuous short ridges more or less radially disposed, and studded with small tubercles. The sides meet at a rounded angle of about 100°. Sutural laminæ small.

Anterior valve.—With minute scattered tubercles, which pass towards the apex into low tubercular ridges, having a concentric arrangement.

Intermediate valves.—*Central areas:* the minute surface ridges, when visible, are longitudinally disposed on the jugum, but become radial or oblique on the pleura. The tubercles are round on the jugum, but become somewhat oval on the pleura, and there appear to be concentrically arranged, although in some valves they seem to more or less regularly diverge from the apex. *Lateral areas:* the surface ridges are radial, and more pronounced than elsewhere. On the upper portion of the areas there are transverse low ridges placed further apart than the former; these ridges by being interrupted gradually pass into tubercles. The tubercles are round, distinctly smaller than in the central areas, and more scattered.

Posterior valve.—With a small central umbo. *Anterior area:* with concentric tubercles, as in the lateral areas. *Posterior area:* similar to the anterior valve.

Girdle.—Narrow, with delicate scales, which form a minute fringe at the edge.

Colour.—Greyish white, with one or two irregular reddish brown flecks.

Size.—Length, 8 mm.; breadth, 3·5 mm.

Gills.—Seven in number, extending between the prominent anus and postero-lateral angle of the foot. The gill row is one-seventh of the total length of the body, the proportion with regard to the length of the foot is 1 : 4·5. They are of moderate size, the middle being the largest, slightly decreasing behind but much more so in front.

Leptochiton belknapi, Dall (Pl. I. fig. 2; Pl. II. figs. 2*a*–2*d*).

Leptochiton belknapi, Dall, Proc. U.S. Nat. Mus., 1878, pp. 1, 317.

"L. t. elongatâ, valde elevatâ, dorsaliter angulatâ; albidâ plus minusve cinereo et nigrotinctâ; valvis elevatis, apicibus distinctis; mucrone centrali conspicuo; sculptura ut in *Leptochiton alveolo*, sed granulis in areis dorsalis sparsim et quincuncialiter dispositis.

[1] The specific name is derived from βίνθος, depth, especially of the sea.

Valva posticâ sub apicè concavâ, posticè sinuatâ. *Zona* minimâ, spiculis tenuibus versus marginem munita. Lon. 10·0. Lat. 3·0 mm. Div. 90°."

"North Pacific Ocean, in lat. 53° 08′ N., lon. 171° 19′ W., at a depth of 1006 fathoms; black sand and shells. Brought up in the sounding-cup by Capt. Geo. E. Belknap, U.S.N., on the sounding expedition of U.S.S. 'Tuscarora' in 1874, bottom temperature 35°·5 F. (Specimens obtained by H.M.S. Challenger in Balfour Bay, Royal Sound, Kerguelen Id., Southern Ocean, in 20–60 fms., for examination of which I am indebted to the courtesy of Rev. R. J. Boog Watson, are apparently identical with Captain Belknap's species.)" *Loc. cit.*, p. 317.

I have quoted the last paragraph in full, as Dall refers to some Challenger specimens. I received only one minute specimen from Kerguelen Island, which will be found to differ considerably from *Leptochiton belknapi*. It is most probable that Dall refers to the two specimens from off the Philippine Islands which I have identified as *Leptochiton belknapi*.

Locality.—Station 205. November 13, 1874. Lat. 16° 42′ N., long. 119° 22′ E. Off Cape Bolinas, Luzon, Philippine Islands. 1050 fathoms. Blue mud. Bottom temperature 37°.

Shell.—Brittle, closely covered with large round smooth tubercles. The sides meet at an angle of about 110°. Sutural laminæ small.

Anterior valve.—With a few irregular lines of growth, thickly covered with irregularly disposed tubercles.

Intermediate valves.—Central areas: with a shallow depression on each side of the median ridge, which gives the latter a pinched appearance; this depression is most apparent at the hinder border of each valve. The tubercles have a general arrangement in oblique lines radiating forwards from the keel, and at the same time in lines concentric to the umbo, but these two series of lines are not always regular, and the tubercles often appear to be irregularly disposed. A series of short concentric rows usually demarcate the anterior border of the lateral areas. *Lateral areas:* scarcely apparent; a groove indicating a line of growth occurs at a short distance from the girdle; tubercles irregularly disposed, with a tendency, however, to concentric lines.

Posterior valve.—With a small subcentral umbo, behind which is a slight depression. *Anterior area:* the lateral longitudinal depression causes the jugum to be slightly prominent, and thus gives the anterior area a somewhat trilobed appearance; the tubercles radiate from the rounded keel. *Posterior area:* with concentric lines of growth and closely set tubercles.

Girdle.—Narrow, thickly covered with delicate small oval scales: longer, narrower, and more pointed scales occur along the border, and in the angles between the valves.

Colour.—Greyish white.

Size.—Length about 12 mm.; breadth, 5 mm.; height about 2·5 mm.

Gills.—Forming a short posterior row, six or seven in number.

This species is considerably larger and coarser than the preceding. The tubercles are twice the size, and closer together. The shell is also comparatively sharply keeled, instead of having a gently rounded appearance.

Leptochiton kerguelensis, n. sp. (Pl. I. fig. 3; Pl. II. figs. 3*a*–3*e*).

Habitat.—Station 149c. January 19, 1874. Lat. 49° 32′ S., long. 70° W. Balfour Bay, Royal Sound, Kerguelen. 60 fathoms. Volcanic mud. Bottom temperature probably 40°.

Shell.—Minute, smooth, or with scattered minute tubercles; the sides meet at an angle of about 100°; sutural laminæ small, triangular.

Anterior valve.—Small, smooth, with scattered aborted tubercles.

Intermediate valves.—*Central area* smooth, with very faint longitudinal striæ; *lateral areas* scarcely discernible, with faint radial striæ and minute concentric interrupted ridges towards the apex, which pass into inconspicuous small scattered tubercles.

Posterior valve.—With full rounded umbo, behind which is a shallow depression. *Anterior area:* similar to the central areas of the intermediate valves. *Posterior area:* similar to the anterior valve.

Girdle.—Narrow, with delicate scales.

Colour.—Uniform whitish.

Size.—Length, 3 mm.; breadth, 1·5 mm.

Gills.—Posterior, eight or nine in number.

Leptochiton alveolus (M. Sars, MS.)

Chiton alveolus (M. Sars, MS.), Lovén, Ind. Moll. Lit. Scand. Occ., 1846, p. 159.
Lepidopleurus alveolus, G. O. Sars, Moll. Reg. Arct. Norvegiæ, 1878, p. 110, pl. vii. figs. 3a–i, pl. I. fig. 7.
Leptochiton alveolus, Dall, Proc. U.S. Nat. Mus., 1878, p. 317.

"Corpus colore nunc pallidiore, albido-cinereo, nunc obscuriore, interdum fere omnino nigro, forma quam solito angustiore, elongato-oblongum, plus duplo longius quam latius, zona perangusta, squamulis inæqualibus, nonnullis spinæformibus.

"Testa sat convexa, dorso æqualiter arcuato ne vestigium quidem carinæ vel arearum lateralium præbente, valvulis sat elongatis, postica antica majore, semiorbiculari, antice ad lineam rectam truncata, mediis subæqualibus, margine postico recto, antico medio leviter emarginato. Superficies valvularum tuberculis minutis ovatis regulariter dispositis ubique sculpta. Long. 16 mm."—(G. O. Sars.)

Habitat.—West coast of Norway, Hardangerfjord, 420 fathoms; between Lofoten and Bodö, 150 to 300 fathoms (Sars); Gulf of St Lawrence, in 220 fathoms, between Cape Rosier and the south-west point of Anticosti Island (Whiteaves); St George's Bank, Gulf of Maine, 150 fathoms, U.S. Fish Commission, 1872 (Dall).

I have introduced this species for the sake of comparison with the foregoing, as they are undoubtedly allied forms. There are several other species of *Leptochiton* which it is unnecessary to refer to here.

The following table has been drawn up to facilitate a comparison between the foregoing species :—

	Angle of Shell.	Lateral Areas.
1. *Leptochiton alveolus* (Sars). . .	Almost semicircular	Obsolete
2. „ *belknapi*, Dall. . .	Angular, 90°	Raised, concentrically rugose
3. „ „ (Challenger)	Angular, with a lateral depression, 110°	Scarcely apparent
4. „ *benthus*, n. sp. . .	Rounded angle, 100°	Slightly raised, rugose in upper portion
5. „ *kerguelensis*, n. sp. .	Angular, 100°	Scarcely apparent

	Surface of Shell.	Arrangement of Tubercles.			
			Jugum.	Pleura.	Lateral Areas.
1.	Smooth (?)	Close	Even, in no pattern.		
2.	„ (?)	More widely	Quincunx	In series (?)	Irregular
3.	Smooth	Close	Fairly regular	In series	Irregular
4.	Striated	More widely and rather small	Irregular	Irregular	Smaller size, and more distant
5.	„	...	None	None	Minute and scattered

From this table it will be seen that the first three species belong to the same group of forms. Dall hesitated about separating his species from *Leptochiton alveolus*, and he, Boog Watson, and myself, at first referred the two latter to the same species; and it is only after repeated and careful scrutiny that I have finally decided to consider them as distinct.

We are still in the analytical stage with regard to this group, and it is perhaps advisable, at all events for the present, rather to emphasise any distinctions, and with this intent I have described my specimens with as much minuteness as possible. Unfortunately Dall has given us no figure of *Leptochiton belknapi*, but I have little doubt that the Challenger specimens from the Philippines are examples, or, at most, varieties of that species.

Genus *Hemiarthrum*, Carpenter, MS.

Hemiarthrum, Carpenter M.S., Dall, Bull. U.S. Nat. Mus., 1876, vol. iii. p. 44.

"Valvæ terminales laminatæ, haud articulatæ; laminæ laterales obsoletæ; zona lanuginosa, porifera; branchiæ posticæ."

Hemiarthrum setulosum, Carpenter MS. (Pl. I. fig. 4; Pl. II. figs. 4*a*–4*l*).

Hemiarthrum setulosum (Carpenter MS.), Dall, Bull. U.S. Nat. Mus., 1876, vol. iii. p. 44.
„ „ Dall, Proc. U.S. Nat. Mus., 1878, p. 314.

Habitat.—January 20, 1874. Royal Sound, Kerguelen Island. Shore.
Kerguelen Island, on stones at low water (Dr Kidder).

"H. t. latiore, curvata, olivaceo-fusca; jugo planato; mucrone subcentrali? areis haud definitis; totâ superficie sensim quincunxiter granulosâ, granis satis extantibus.

"*Intus;* valva anticâ et posticâ conspicue laminata; laminis acutis, haud incisis, haud regularibus, valde extantibus; subgrundis spongiosis, minimis; valvis centralibus et posticâ laminis suturalibus, triangularibus, maxime distantibus, extantibus, decliviter, lateraliter, continuis; sinu maximo, valde spongioso.

Zona modicâ, haud expansâ, solida, leve; sparsim minutissime lanuginatâ; poris minutissimis, setuliferis ad suturas, et circ. iv. circumvalvas terminales sitis, instructâ, setulis minimis, curtissimis.

Animal, pede capiteque normalibus; branchiis majoribus posticis, utroque latere circiter vi., medio pede tenus. *Lon.* 13 mm. *Lat.* 7 mm. *Div.* variante ad 130.°"

The above description was written by Carpenter from two specimens shortly before his death, and incorporated by Dall in his report on the Mollusca collected by Dr Kidder at Kerguelen Island, who accompanied the United States Transit of Venus Expedition, 1874–75.

The colour of the shell, in the single specimen collected by the Challenger Expedition, is of a uniform warm dark brown, and the girdle is chestnut brown, with a pale crenulated border round the margin of the valves. In each of the dark triangular bays between the valves is a small tuft of short white spicular scales, and there are six similar tufts round the anterior border of the first valve.

The *anterior* and *posterior valves* and the lateral areas of the intermediate valves are marked by concentric lines of growth, otherwise the latter are scarcely discernible. The jugum is very gently rounded, so that the pleura are slightly depressed. The unslit insertion plate of the anterior and posterior valves is shown in Pl. ii. figs. 4*a*, 4*f*.

The *girdle* is thick and soft, with a few minute scattered scales. There is a distinct fringe of reddish brown elongated striated scales round the margin. The scales forming the tufts are stout, and white in colour. Carpenter describes the anterior tufts as *about* four in number; in my specimen there are *six* anterior tufts. Evidently Carpenter was not quite satisfied on this point, as in all other Chitons which possess tufts, only four are present; and, consequently, that number might be expected to occur in this species also.

The *head lappets* are rather large, and the anus is on a large rounded papilla. The longitudinal band on the under side of the girdle (veil of Carpenter) is produced into flaps at the posterior extremity.

The *gills* form a short posterior row, and appear to be about six in number; they decrease in size anteriorly.

Length 9 mm.; breadth 4 mm.; sides of valves meet at an angle of about 115°.

B. — Ischnoidea.

Callochiton, Gray.

Callochiton platessa (Gould).

Chiton platessa, Gould, Proc. Boston Soc. Nat. Hist., 1846, vol. ii. p. 143; U.S. Explor. Exped., (Wilkes), 1852, vol. xii. p. 320.
„ *crocinus*, Reeve, Conch. Icon., 1847, pl. xxii. fig. 146.
Leptochiton versicolor, A. Adams, Proc. Zool. Soc. Lond., 1852, p. 92, pl. xvi. fig. 5.
Lepidopleura platessa, Gould, Otia (Rectifications), 1862, p. 242.
Leptochiton versicolor, Angas, Proc. Zool. Soc. Lond., 1867, p. 223.

Habitat.—Port Jackson. 6 to 15 fathoms.

Australia (Gould and British Museum); Botany Bay (Angas); New Zealand (British Museum).

The tablets in the British Museum testify to Carpenter's acceptance of the above synonymy.

Shell.—Smooth, entire surface delicately shagreened, terminal valves and lateral areas only with indistinct concentric lines of growth; lateral areas not prominent, with no radial markings; umbones small, pointed.

Girdle.—With delicate flat elongated scales.

Gills.—Extend along whole length of foot, about thirty in number on each side.

Colour.—Central areas yellowish, obscurely mottled with orange; on some valves there are a central and a lateral pair of pale lines. Lateral areas and terminal valves of a uniform dull orange colour, and uniformly spotted with minute black dots, which are absent from the central areas, the posterior border of the valves is ornamented with alternate lighter and darker spots. Ligament brownish, with a few irregular small white flecks and five large white spots, four very large spots extending from the points of junction of the first and second, and seventh and eighth valves respectively, to the edge of the girdle; the fifth spot being in the median line posteriorly.

Adams' description agrees, on the whole, very well with the single specimen collected by the Expedition, but the coloration of his figure is not at all similar, with the exception of the very characteristic five white spots on the girdle.

Angas describes his specimens as being variegated with maroon and olive.

Ischnochiton, s.s. Carpenter.

Ischnochiton boogii, n.n.

Chiton roseus, Sowerby (not of Blainville), Proc. Zool. Soc. Lond., 1832, p. 58; Conch. Illustr., 1841, p. 5, No. 59, pl. xxxix. fig. 14.
„ „ Reeve, Conch. Icon., 1847, pl. xxv. fig. 119.

Habitat.—Station 113A. September 2, 1873. Fernando-Noronha anchorage. 7 to 25 fathoms.

Island of Plata, West Columbia; found on dead shells in 17 fathoms (Cuming; Sowerby).

The name *Chiton roseus* having been preoccupied by Blainville (Dict. des Sci. Nat., 1825, vol. xxxvi. p. 553), Sowerby's name cannot stand. The fact that Blainville's species is an *Acanthochiton*, while that of Sowerby is an *Ischnochiton*, does not affect the question, since they were both described as *Chiton roseus*. I have therefore re-named this species *Ischnochiton boogii*, as the specific names of *Sowerbianus*, Reeve, and *Watsonii*, Sowerby, are also preoccupied.

The locality attributed, on the authority of Cuming, to this species, made the identification with it of a Chiton from Fernando-Noronha very doubtful. A shallow-water species was not likely to live in both the Atlantic off Brazil and in the Pacific off West Columbia, with the whole breadth of South America between. That the Challenger specimen is identical with the British Museum specimens is beyond doubt. May not the difficulty find solution in the fact that the "I. of Plata," as it stands on Cuming's tablet in the British Museum, and to which Sowerby (*loc. cit.*) added "W. Columbia," is really some island in the estuary of La Plata?

The above criticism was first suggested to me by the Rev. R. Boog Watson, to whom it gives me great pleasure to dedicate this species.

The single specimen in the collection is of a pink colour mottled with creamy yellow, with an obscure yellow line along the jugum, and with a pale spot on each side of the line on several valves; there are also several irregular dark patches; the posterior valve is deep-rose below the umbo. The girdle is mottled brown and white, there being a white patch at the junction of each valve.

The shell is long, narrow, and arched, anterior and posterior valves with fine concentric ridges; the umbo of the latter is prominent. The intermediate valves are apparently smooth, but really with extremely delicate longitudinal striæ; the lateral areas are characterised by wide ridges. The ligament has stout, tall, imbricate scales.

The three specimens of this species in the British Museum are pink and only slightly flecked with white, no black or brown spots, and in two of them the central areas have concentric lines like those of the lateral areas.

Ischnochiton viridulus (Couthouy).

Chiton viridulus, Couthouy MS. (Gould), Proc. Boston Soc. Nat. Hist., 1846, vol. ii. p. 144; Wilkes, U.S. Explor. Exped., 1852, vol. xii. p. 318; Otia, 1862, p. 5.

Habitat.—Cape Town.

Orange Harbour, Cape of Good Hope.

Shell.—Of the single specimen uniformly covered with minute low tubercles, which are horizontally disposed on the pleura; lateral areas scarcely distinguishable; the peri-

pheral portion of the terminal valves and lateral areas is marked by slight concentric lines of growth.

Colour.—White, with a few irregular dark flecks on the sides.

Girdle.—With delicate, imbricate, coarsely striated scales.

Specimens in the Zoological Museum of the University of Cambridge are very similar, they are of a creamy-yellow colour, very slightly tinged with green, the lateral areas are moderately elevated.

Ischnochiton longicymba (Blainville).

Chiton longicymba, Blainville, Dict. des Sci. Nat., 1825, vol. xxxvi. p. 542; Quoy and Gaimard, Voyage de l'Astrolabe, Zool., 1834, vol. iii. p. 390, Atlas, pl. lxxiv. figs. 1–18; Deshayes in Lamarck's Hist. Nat. Anim. s. vert., 1836, vol. vii. p. 512; Sowerby, Conch. Illustr., 1841, No. 45, pl. clx. fig. 67 (vars.); Reeve, Conch. Icon., 1847, pl. xxiv. fig. 163.

Lepidopleurus longicymba, Angas, Proc. Zool. Soc. Lond., 1865, p. 187, and 1867, p. 222.

Ischnochiton longicymba, Dall, Proc. U.S. Nat. Mus., 1878, pp. 78, 113.

Habitat.—Port Jackson. 6 to 15 fathoms.

Australia and New Zealand.

I have identified as this species three specimens obtained by the Expedition from Port Jackson. The shell is elongated, having a rounded angle, and with the lateral areas but slightly raised. The whole of the central areas are delicately shagreened; the lateral areas and terminal valves with very fine interrupted and often bifurcated ridges. The whole shell has a decidedly smooth appearance. One specimen is of a pale creamy green colour and another pale pink, both with a few dark spots on the central areas; the third is white, with a black band all round the edge, and with usually paired black marks on several of the valves on each side of the jugum, resembling in some respects Quoy and Gaimard's fig. 14. The girdle is indistinctly banded.

Ischnochiton fruticosus (Gould).

Chiton fruticosus, Gould, Proc. Boston Soc. Nat. Hist., 1846, vol. ii. p. 142; U.S. Explor. Exped. (Wilkes), 1852, vol. xii. p. 319; Otia, 1862, p. 4, and Rectifications, p. 242.

„ *divergens*, Reeve, Conch. Icon., 1847, pl. viii. fig. 44.

Lepidopleurus proteus (?), Angas (? of Reeve), Proc. Zool. Soc. Lond., 1867, p. 222.

Habitat.—Port Jackson. 6 to 15 fathoms.

New South Wales (Gould); New Holland (Jukes-Reeve); Port Jackson (Angas).

This is a very variable form, not only in colour but also in sculpture. In order to define the limits of this and allied species a large number of specimens is necessary. The following species form a series, appearing to pass more or less into each other, or at all events to be closely allied:—*Ischnochiton longicymba*, Blainville; *Ischnochiton fruticosus*,

Gould; *Ischnochiton divergens*, Reeve; *Lepidopleurus proteus*, Reeve; *Lepidopleurus ustulatus*, Reeve. The first has the central areas uniformly shagreened, and the lateral areas with fine ridges. The remaining forms have the jugum of the central areas shagreened and the pleura finely ribbed, the lateral areas being distinct and having coarse, interrupted, and irregular ridges. The extreme of this style of sculpture is reached in *Callistochiton antiquus*, Reeve, with its strong pleural ridges and secondary cross ridges on the central areas, and the two prominent coarsely rugose ridges on the lateral areas.

The colour of the half-dozen specimens is greyish, yellowish, or rusty, mottled and passing into a deeper colour at the edge, forming a distinct brownish, greenish, or orange border to the shell; median dorsal line with a series of dark spots. Ligament more or less banded.

Lepidopleurus, Carpenter.

Lepidopleurus dorsuosus, n. sp. (Pl. I. fig. 5, Pl. III. figs. 5*a*–5*i*).

Station 145A. December 27, 1873. Lat. 46° 41′ S., long. 38° 10′ W. Prince Edward's Island. 310 fathoms. Volcanic sand.

Shell.—Remarkably compressed laterally, the two sides meeting at an angle of 75°.

Anterior valve.—Concentrically rugose, with about twenty-six radiating low irregular ridges, some of which bifurcate.

Intermediate valves.—*Central area:* with jugum and anterior border striated, the pleura with distinct horizontal ridges. *Lateral areas:* distinct, concentrically rugose, usually with three main radiating low ridges, the anterior and posterior of which are often bifid.

Posterior valve.—Concentrically rugose, with fifteen irregularly arranged low radiating ridges. The anterior ridge is broader than the others, and may be slightly bifid. Umbo rudimentary; anterior border smooth, with slight concentric lines of growth. Laminæ of insertion moderate in size.

Girdle.—Narrow. Upper surface with ovoid, slightly overlapping, somewhat granular scales; edge with minute projecting spicules under surface, with long, narrow, closely applied scales.

Colour.—White.

Size.—Length, 21·5 mm.; breadth, 7·5 mm.; height, 6 mm.

Gills.—Extending to more than half the length of the foot, twenty in number, the middle somewhat larger than the remainder.

The name *dorsuosus*, full of ridges, is applicable to this species on account of its numerous longitudinal and radiating ridges, and at the same time recalling the steep ridge of the shell itself.

Lepidopleurus dallii, n. sp. (Pl. I. fig. 6, Pl. III. figs. 6*a*-6*i*).

Habitat.—Station 310. January 10, 1876. Lat. 51° 27′ 30″ S., long. 74° 3′ W. 400 fathoms. Blue mud. Bottom temperature 46°·5.

Shell.—Evenly covered with closely set minute low tubercles, which give it a granular appearance, with straight sides meeting at an angle of 110°.

Anterior valve.—Coarsely granular, with twenty-six short radial rows of tubercles, each row consisting of four or five tubercles, which diminish in size from the periphery towards the apex; the posterior row is the broadest, and is partially bifid.

Intermediate valves.—*Central area:* jugum, coarsely granular; pleura, with about twelve or thirteen distinct horizontal ridges. *Lateral areas:* granular, with three main radiating rows of tubercles, the anterior and posterior often partially double.

Posterior valve.—Remarkably flat, coarsely granular, with nineteen rows of three tubercles each, of which the outermost is the largest. Umbo scarcely, if at all, raised above the surface. Anterior border coarsely granular, with the granules passing into oblique ridges on the pleura.

Girdle.—Medium breadth, upper surface with smooth imbricating scales in oblique rows, about seven or eight in a row, those nearest the shell being the smallest.

Colour.—Greyish white.

Size.—Length, 11 mm.; breadth, 6 mm.; height, about 3 mm.

Gills.—Extending to about three-quarters the length of the foot, diverging posteriorly and hidden by a slight swelling of the longitudinal band on the under surface of the girdle; about twenty-one in number, largest about the fifth from the posterior end, and gradually diminishing in size anteriorly.

I have associated this species with the name of my friend Mr W. H. Dall, of the Smithsonian Institution, Washington, U.S.A.

Lepidoradsia, Carpenter.

Lepidoradsia australis (Sowerby).

Chiton australis, Sowerby, Mag. Nat. Hist., 1840, p. 290, and Conch. Illust., 1841, p. 2, No. 19, pl. cxxxix. fig. 46.
„ *evanidus*, Sowerby, Conch. Illust., 1841, p. 3, No. 38, fig. 139.
„ *australis*, Reeve, Conch. Icon., 1847, pl. ii. fig. 10.
Lophyrus australis, Angas, Proc. Zool. Soc. Lond., 1867, p. 221.
Lepidoradsia australis, Dall, Proc. U.S. Nat. Mus., 1878, pp. 79, 113, 115.

Habitat.—Port Jackson. 6 to 15 fathoms.

Australia, Raine Island, Torres Strait (Cuming); Port Jackson, "common under stones" (Angas).

The collection includes several specimens of this common and well-known form.

Callistochiton, Carpenter.

Callistochiton antiquus (Reeve).

Chiton antiquus, Reeve, Conch. Icon., 1847, pl. xxv. fig. 169.
Lepidopleurus antiquus, Angas, Proc. Zool. Soc. Lond., 1867, p. 223.
Callistochiton antiquus, Carpenter MS.

Habitat.—Port Jackson. 6 to 15 fathoms.

Port Jackson and Newcastle, New South Wales (Dr Dieffenbach in British Museum).

This species closely resembles *Callistochiton elenensis*, Sow. (Proc. Zool. Soc. Lond., 1832, p. 27, and Conch. Illust., No. 79, pl. clxii. fig. 69), from St Elena, West Columbia, and Panama. Angas considers them synonymous, but he retains Reeve's name. *Callistochiton elenensis*, however, closely resembles *Callistochiton decoratus*, Carp., from California, if indeed it be really distinct. The most pronounced sculpture occurs in *Callistochiton palmulatus*, Carp., also from California.

Mr E. A. Smith has described[1] *Callistochiton coppingeri*, a form closely allied to the above, but apparently sufficiently distinct from it, which also comes from Port Jackson.

C.—Lophyroidea.

Genus *Chiton*, Linné.

Chiton squamosus, Linné.

Chiton squamosus, Linné, Syst. Nat., 1767 (ed. 12), p. 1107; Deshayes, Lamarck's Hist. Nat. Anim. s. vert. (ed. 2), 1836, vol. vii. p. 490; Sowerby, Conch. Illust., 1841, p. 2, No. 13, pl. clxii. fig. 76 (var.); Gray, Proc. Zool. Soc. Lond., 1847, p. 66, and Guide to Moll., 1857, p. 180; Reeve, Conch. Icon., 1847, pl. iii. fig. 16, pl. iv. fig. 23 (var.); Tristram, Proc. Zool. Soc. Lond., 1861, p. 403.
„ *assimilis*, Reeve, Conch. Icon., 1847, pl. xiv. fig. 77, a and b.

Habitat.—Station 36. April 22, 1873. Bermudas. Lat. 32° 7′ 25″ N., long. 65° 4′ W. 30 fathoms. Coral. Two specimens.

West Indies.

Although there is some doubt concerning several of Linné's species of Chitons, conchologists are now quite agreed as to which form they accept as *Chiton squamosus*, Linn., and it is usually regarded as the type-species of the genus as commonly restricted. The brothers Adams selected *Chiton aculeatus*, Linn., as the type of the genus *Chiton* as restricted by them, and they have been followed by other naturalists in this and in the use of the generic name *Lophyrus* for those Chitons with large, smooth, imbricated scales. Dall has discussed this question in his paper On the Scientific Results of the Exploration of Alaska,[2] and he agrees with Carpenter in taking *Chiton tuberculatus*, Linné, as the type of the restricted genus Chiton. Concerning this latter species Dall says: "It is

[1] Zool. Collect. H.M.S. "Alert," 1884, p. 80.

[2] *Proc. U.S. Nat. Mus.*, 1878, p. 300.

figured by Reeve as *C. squamosus*, L., var. *β*. (Conch. Ic., pl. iv. f. 23), . . . It has not been generally united with the *C. squamosus* of L. (S. N., ed. xii.), but is not improbably a variety of it, and belongs to the same restricted group." [1]

There does not seem to be a sufficient distinction between this species and *Chiton assimilis*, Reeve, to keep them apart.

The earlier bibliography of this species will be found in Gmelin's edition of Linné (1791, p. 3203), and in Deshayes' edition of Lamarck (*loc. cit.*, pp. 490, 491).

Chiton murrayi, n. sp. (Pl. I. fig. 7, Pl. III. figs. 7*a*–7*e*).

Habitat.—Valparaiso. Shore.

Shell.—Apparently smooth, but really very closely and finely striated, the striæ being roughened or interrupted; greatly depressed.

Anterior valve.—With radial striæ; under surface with eleven distinct square slits, radial grooves distinct and perforated; teeth of insertion plate serrate.

Intermediate valves.—Narrow, flattened, non-carinate, with sharp depressed umbo, surface striæ longitudinal in central areas, radial in the lateral areas; lateral areas distinct, with slight concentric rugæ, and with three or four scarcely apparent peripheral radial ridges, which die away towards the apex; sutural laminæ shallow, a single lateral slit, lateral insertion plates serrate; jugum with nine rounded teeth, the central being very small.

Posterior valve.—Flattened, slightly umbonate, striæ longitudinal on the anterior area, radial on the posterior area; under surface with seventeen distinct slits, teeth serrate; jugum finely toothed.

Colour.—Upper surface ground colour of shell a greenish grey, slightly clouded with dark brown and black; umbones lighter; on each side of the latter the ground is yellowish; whole surface sprinkled with pale blue spots, which are bounded externally by a black line; on the central areas the spots run in irregular, oblique, backwardly diverging lines, and have a slight tendency to confluence, but on the lateral areas and terminal valves the spots are irregularly scattered; under surface, pale sea-green, darker along the jugum, and with a dark spot at the umbones of the terminal valves.

Girdle.—Upper surface with large imbricate scales, of which the exposed portion is smooth, the hidden portion being usually finely striated longitudinally; colour, dark green, with a tendency to form darker bands opposite the valves; in the angles between the valves a few of the scales are paler and yellowish in colour; under surface with long narrow oblong white scales arranged in transverse series.

Gills.—Extending along the whole length of the foot, about fifty-five or sixty in number.

Size.—Length, 12·5 mm.; breadth, 7·5 mm.

[1] *Proc. U.S. Nat. Mus.*, p. 300.

The following Chitons also have blue spots: *Chiton magnificus*, Desh., and *Chiton disjunctus*, Fremb. The latter is also from Valparaiso, but it would be impossible to mistake these for *Chiton murrayi*.

Superficially, this species bears some resemblance to *Lepidopleurus lentiginosus*, Sow. (G. B. Sowerby, 1840, Charlesworth's N. S. Loudon's Mag. Nat. Hist., and Conch. Illust., 1841, figs. 120, 121; Reeve, Conch. Icon., 1847, pl. xxiv. fig. 165=*Chiton cyaneopunctatus*, Krauss, Die südafrikanischen Moll.; 1848, pl. iii. fig. 2); but apart from the generic distinctions, Sowerby's species can be distinguished by the perfectly smooth shell, inconspicuous lateral areas, paler colour of the shell generally, and absence of the external black border to the blue spots. I have given myself the pleasure of dedicating this pretty and distinctive little Chiton to Mr John Murray of the Challenger Expedition.

Chiton nigrovirescens, Blainville.

Chiton nigrovirescens, Blainville, Dict. des Sci. Nat., 1825, vol. xxxvi. p. 538.
„ *capensis*, Gray, Spicilegia Zool., 1828, p. 5.
„ „ Wood, Index Test. Suppl., 1828.
„ „ Reeve, Conch. Icon., 1847, pl. xxii. No. 151.
„ „ Krauss, Südafrik. Moll., 1848, p. 37, No. 5.

Habitat.—Sea-point, near Cape Town. Shore.

Cape of Good Hope.

Half-a-dozen specimens of this pretty little Chiton were collected. Blainville's description is not very good, but it is sufficiently exact to justify the retention of his name.

Chiton pellis-serpentis, Quoy and Gaimard.

Chiton pelliserpentis, Quoy and Gaimard, Voyage de l'Astrolabe, 1834, vol. iii. p. 381, pl. lxxiv. figs. 17–22.
„ „ Deshayes, Lamarck, Hist. Nat. Anim. s. vert., 1836 (ed. 2), vol. vii. p. 508.
„ *pellis-serpentis*, Reeve, Conch. Icon., 1847, pl. xv. fig. 84.
„ „ Hutton, Cat. Mar. Moll. of N. Z., 1873, p. 46, No. 217, and Manual New Zeal. Moll., 1880, p. 111.
„ „ v. Martens, Crit. List., 1873, p. 36.

Habitat.—Durville Island, New Zealand. Beach.

New Zealand.

This species is stated to be extremely common in New Zealand, but the Expedition only brought back a single specimen.

Chiton jugosus, Gould.

Chiton jugosus, Gould, Proc. Boston Soc. Nat. Hist., 1846, vol. ii. p. 142.
„ „ Gould, Wilkes' Explor. Exped. Mollusca, 1852, vol. xii. p. 317, pl. xxviii. fig. 430.
Lophyrus jugosus, Gould, Otia Conch., 1862, pp. 3, 242.
„ *concentricus*, Reeve, Conch. Icon., 1847, pl. xvi. No. 95.

Lophyrus concentricus, Angas, Proc. Zool. Soc. Lond., 1867, p. 221, No. 228.
„ *jugosus*, Angas, Proc. Zool. Soc. Lond., 1867, p. 222, No. 231.
Chiton jugosus, E. A. Smith, Rep. Zool. Collect. "Alert," 1884, p. 78.

Port Jackson, Sydney. 6 to 15 fathoms.

This species was independently described by Gould and Reeve about the same time. Angas distinguishes *Chiton jugosus* as having the terminal valves smooth, whereas they are concentrically grooved in *Chiton concentricus*, but this distinction does not appear to be of sufficient importance to separate the two forms. The two Challenger specimens have the terminal valves smooth, or, at most, with lines of growth, but the concentric lines on the valves are very deceptive. Angas found specimens of the latter at Watson's Bay with "the second valve sometimes blood-colour or scarlet;" one of the Challenger specimens has this peculiarity. The specimens Angas identified as *Lophyrus jugosus*, with smooth terminal valves, occurred at Camp Cove. Both were found at very low tides.

All the localities are from New South Wales, as Smith says, "Confirmation of the New Zealand locality (Reeve) of this species is still wanting."

D.—Acanthoidea.

Genus *Acanthopleura* (restricted by Carpenter), Guilding.

Acanthopleura spiniger (Sowerby).

Chiton aculeatus, Quoy and Gaimard (not of Gmelin?), Voyage de l'Astrolabe, Zool., 1834, vol. iii. p. 373; Atlas, pl. lxxiv. figs. 1–5.
„ *spiniger*, Sowerby, Conch. Illust., 1841, p. 1, pl. clxi. fig. 68.
„ „ Reeve, Conch. Icon., 1847, pl. xiv. fig. 75.
Maugeria spinigera, Gray, Guide Moll. Brit. Mus., 1857, p. 184.
Acanthopleura spinigera, Dall, Proc. U.S. Nat. Mus., 1882, vol. i. p. 80.
„ *spiniger*, E. A. Smith, Zool. Collect. H.M.S. "Alert," 1884, p. 81.
Chiton granatus,[1] Reeve, Conch. Icon., 1847, pl. v. fig. 24 (Mus. Cum.).
„ *macgillivrayi*,[1] A. Adams, Proc. Zool. Soc. Lond., 1855, p. 120.
Maugeria owenii,[1] Gray, Guide Moll. Brit. Mus., 1857, p. 184.
Acanthopleura glareosa,[1] Carpenter MSS. in Mus. Cum. (Brit. Mus.)
Chiton borbonicus (?),[1] Deshayes, Moll. de Réunion, 1863, p. 37, pl. v. figs. 12, 13.
„ *piceus* (?),[1] Reeve (*non* Gmelin), Conch. Icon., 1847, pl. xiii. fig. 70.
= „ *obesus*,[1] Shuttleworth, Bern Mittheil., 1853, p. 79.
„ *cunninghamii* (?),[1] Reeve, Conch. Icon., 1847, pl. xxvii. fig. 181 (Mus. Cum.).

Habitat.—Station 187. September 9, 1874. Lat. 10° 36′ S., long. 141° 55′ E. Albany Island, Cape York, North Australia. 6 fathoms. Coral mud.

Philippine Islands (Cuming); New Guinea, New Ireland (Quoy and Gaimard); Port Essington (Jukes); Port Molle and Clairemont and Bird Island (Coppinger); New Zealand and Tongatabou, Friendly Islands (Quoy and Gaimard); Fiji (for *Acanthopleura macgillivrayi*); New Zealand (for *Acanthopleura glareosa*).

[1] These synonyms are given on the authority of Mr E. A. Smith, *loc. cit.*

The single specimen is very much worn, but the shell appears to possess concentric lines of growth furnished with minute black tubercles; along the jugum these are either absent or worn away; lateral areas scarcely defined. Ground colour buff, dark at the sides, and streaky on each side of the pale jugum.

The *girdle* is covered with a close covering of very short mixed black and white spines, in which a banded arrangement can be discerned, a darker band corresponding to each valve; there are also numerous large stout blunt spines, which are usually white in colour, but may be black tipped with white.

In a specimen from New Ireland in the Science and Art Museum, Dublin, there is a similar banded arrangement of very small spicules, but the larger ones are of considerable size, being 3 mm. in length, arcuate, and white in colour. The animal itself is 65 mm. in length, and 35 mm. in breadth.

The *Chiton aculeatus* of Quoy and Gaimard is clearly this species. The authors describe two varieties, the one (A.) with short obtuse, closely set spines, and ligament with eight black bands; the other (B.) with long sharp scattered green spines. The anterior valve with nine to twelve (var. A.) striated teeth, the posterior with eight. The under surface of the valves with a brown jugum; the remainder is horn-coloured, with a "burnt spot" (*tache brûlée*) at the angle of the apophyses. Length 4 inches 6 lines, breadth 2 inches, but there are larger. This species is found in New Zealand, New Guinea, and New Ireland. Var. A. is from Tongatabou and Port Dorey, New Guinea. The var. B., which evidently is the same species as that mentioned above from New Ireland, appears to be a well-marked form.

In his MSS. Carpenter states that "*Acanthopleura granata*, Reeve (no locality), is a worn specimen of *Acanthopleura borbonica*, Desh.; and *Acanthopleura macgillivrayi*, A. Ad. (no locality), is perhaps only a fine *Acanthopleura piceus*, Reeve, *Acanthopleura borbonica*, Desh., &c., and very close to *Acanthopleura brevispinosa*, Sow."

I am indebted to my friend, the Rev. H. M. Gwatkin of Cambridge, for a couple of specimens of *Acanthopleura* sp. (?) from Aden in the Red Sea, which undoubtedly belong to the *Acanthopleura spiniger* series. The shell is much more delicate than in the other species of the genus with which I am acquainted. The surface is evenly studded with very small concentrically disposed black tubercles; the colour appears to be a uniform dark brown or black; lateral areas obsolete. The under surface of the valves has some points of interest. There are ten slits in the anterior valve, long teeth, short eaves, the colour is brown, the jugum being of a darker colour. The intermediate valves are greyish, or brownish grey behind, the jugum dark brown in colour, and the sutural laminæ are grey, tinged with madder brown. The posterior border is less peaked than in *Acanthopleura spiniger* (type), and consequently the reflected portion of the tegmentum encroaches less on the under surface; in this respect and in the general appearance of the under surface the intermediate valves somewhat resemble those of *Acanthopleura granu-*

lata from the Barbadoes. The posterior valve has nine or ten slits, long teeth, short eaves; in colour and general appearance it resembles *Acanthopleura spiniger*, except that the shell is very much thinner, the insertion plates whiter, and the jugum, as in the other valves, of a deeper and madder-coloured brown, instead of the nearly uniform slaty brown which characterises what I consider to be the typical species. The striation in all the teeth is also more delicate.

The *girdle* is very closely beset with fairly long, but thin calcareous spines, which are black, with white tips, and in my specimens present no banded arrangement.

Acanthopleura (?) *incana* (Gould).

Chiton incanus, Gould, Proc. Boston Soc. Nat. Hist., 1846, vol. ii. p. 145, and Wilkes' Explor. Exped., 1852, p. 315, pl. xxviii. figs. 432, 432a; also Otia, p. 6.
Maugeria incanus, Gould, Otia, 1862, p. 248.
Acanthopleura incana, E. A. Smith, Zool. Collect. H.M.S. "Alert," 1884, p. 81.
Chiton piceus (?), Angas (not of Gmelin), Proc. Zool. Soc. Lond., 1867, p. 223.

Habitat.—Oosima, Japan. Specimen B.
Port Jackson. 6 fathoms. Specimen C.
New South Wales (Gould); Port Jackson (Coppinger); Stewart Island, New Zealand (C. Traill in British Museum).

The shell in the specimens from Japan is very finely tubercular, with concentric lines of growth; the lateral areas are scarcely apparent; dark brown in colour, with a pale line on each side of the jugum.

The girdle spines in the Japanese specimen (B.) are mostly dark brown in colour tipped with pale brown or white; a few are white, and only very indistinctly suggest a banded arrangement.

A second specimen from Japan (A., given me by Mr Dall) has distinct bands for the first, second, third, and seventh valves, those for the fourth, fifth, and sixth valves are confluent, and nearly the whole of the girdle round the last valve is black.

The shell in the example from Port Jackson (C.) is sculptured with concentric waved lines, the inconspicuous lateral areas with short, very fine radial ridges; colour as above.

The girdle spines of this specimen are somewhat smaller than in the former, and are arranged in alternate black and white bands, only slightly differing on the two sides. There is a broad black band at the sides of the first and last valve, a narrow one opposite the second and third valves, a broad band extending along the fourth and fifth valves, and a narrow one between the sixth and seventh valves, making six on each side. The dark spines are also tipped with a lighter colour or with white.

In Gould's type-specimen there are ten black bands on the girdle, the anterior and posterior valves each having two pairs. The spines of the girdle are much more uniform in size than in the preceding species.

It is probable that the *Chiton piceus* of Angas is this species. He informs us that "this very common species is freely distributed on most parts of the coast of New South Wales. Dwelling in cavities on the upper surfaces of the rocks exposed to the full action of the waves, the valves are generally more or less worn and destitute of character. Length, 2½ inches."

The two foregoing species have a close external resemblance with each other and with *Acanthopleura picea* (Gmel.), auct. (non Reeve). As a matter of fact, the former has frequently been described as *Acanthopleura picea* in spite of its apparently discontinuous distribution in the West Indies and in the Indian Ocean. To Mr E. A. Smith of the British Museum belongs the credit of pointing out characters on the under surface of the valves which serve to distinguish these three species from each other.

These species can be separated on a careful comparison of the sculpture of the shell, but unfortunately the shells are almost invariably so corroded that the surface markings are obliterated. The differences in the character of the girdle are too slight to be of much value; the light and dark bands of the latter are too variable to be of any use.

The following analyses refer to two out of many specimens in my own collection of *Acanthopleura granulata* (Gmel.), from Barbadoes, in future referred to as A. and B., and to a specimen (C.) of *Acanthopleura* sp. (?) (= *Acanthopleura picea*, Gmel.) from the West Indies, probably from St Thomas, for which I am indebted to my friend Mr W. H. Dall. Also to the Challenger specimen of *Acanthopleura spiniger* from Cape York, and to three specimens of *Acanthopleura incana*. The first two, A. and B., are from Japan, the last (C.) from Port Jackson. Specimen A. was given me by Mr Dall, B. and C. were collected by the Challenger.

Unfortunately the Challenger Expedition did not obtain any specimens of this genus from the West Indies, but as the West and East Indian forms have been confused with one another, I have not hesitated to deal with them all at considerable length.

Table of Measurements in mm. of the Upper Surface (Tegmentum only) of the Isolated Valves.

	Acanthopleura granulata.				*Acanthopleura* sp. (?)		*Acanthopleura spiniger.*		*Acanthopleura incana.*					
	A.		B.		C.				A.		B.		C.	
Valves.	Length.	Brdth.	Length.	Brdth.	Length.	Brdth.	Length.	Brdth.	Length.	Brdth.	Length.	Brdth.	Length.	Brdth.
1	12	19	9	16	10	20	13·5	19	9	15·5	5	10	4	8
2	14	22·5	11	19	12	23	16	23	10·5	18·5	6	12	5·5	9
3	11	25·5	9	21	9	26	12	26	7	20	5	12·5	3	10
4	13	27·5	10·5	23	10	27·5	13·5	28	10	22	5	13	4	11
5	13	28	10	24	10·5	28	13	28	10·5	23	6	13·5	4·5	11·5
6	13·5	26·5	11	23	11	26·5	12	27	9·5	22	6	13	3·5	11
7	11	23	8·5	20·5	8·5	23	11	24	8	20	5	12·5	3·5	10
8	8	17	7·5	16	10	19	10	20	6	15·5	4·5	10	3·5	8
Total size of body	61	37	55	31	65	40	85	42	60	40	28	20	21	15

Owing to the corrosion of the umbo the measurements of the length of the valves are not absolutely accurate, and as most of the specimens are curled the total length of the body is only approximate.

From this table it will be seen that the ratios of the length to the breadth of the valves is the same in *Acanthopleura granulata*, A. and B., but the valves are relatively shorter in *Acanthopleura* sp., C.

It appears that the valves are relatively very slightly longer in *Acanthopleura spiniger* than in *Acanthopleura granulata* (A. and B.), but the ratio in *Acanthopleura incana* is as nearly as possible the same.

Analysis of Under Surface of Valves.

Anterior valve.—Acanthopleura granulata, A. and B., 13 slits; teeth long, the central as a rule green in colour, the lateral usually brownish; eaves short; colour pale slate or pearly gray, dark brown jugum. *Acanthopleura* sp., C., 12 slits; teeth short, all green in colour; eaves long; colour pale greenish gray, dark brown jugum but smaller than in former. *Acanthopleura spiniger*, 10 slits; teeth long, dusky colour; colour pale dusky brown. *Acanthopleura incana*, A., 11 slits; teeth short; eaves short; colour uniform very dark brown; B. 10 slits, darker colour; C. similar, but with pale teeth.

Intermediate valves.—Acanthopleura granulata, A. and B., colour greyish; jugum dark brown; sutural laminæ pale, more or less splashed with brown; posterior border of anterior laminæ deeply grooved. *Acanthopleura* sp., C., colour pale sea-green; jugum dark brown; sutural laminæ of uniform colour, with their posterior border very slightly striated; the jugal insertion-plates are narrower than in the former. *Acanthopleura spiniger*, colour uniform greyish brown; jugum darker brown; anterior laminæ paler brown; posterior border of sutural laminæ coarsely grooved. *Acanthopleura incana*, colour uniform very dark brown to black; anterior laminæ same colour; posterior border of sutural laminæ slightly grooved. In C. the sutural laminæ become lighter anteriorly, the rim being nearly white.

Posterior valve.—Acanthopleura granulata, A. and B., 10 to 12 slits; teeth long, all green, or anterior tinged with brown; eaves short; colour white; jugum brown. *Acanthopleura* sp., C., 11 to 12 slits; teeth short, green, set more obliquely than the former, and with considerable symmetry with the median line, eaves long. The eaves are so long that when the valve is placed on a smooth surface and viewed on a level with the eye, the teeth are entirely hidden, whereas they are seen to nearly their whole extent in the former species; colour white and pale green; jugum small brown spot. *Acanthopleura spiniger*, 7 or 8 slits; teeth long, greenish; eaves short; colour, posterior border and jugum brown, between them a greenish band. *Acanthopleura incana*, teeth entirely absent; colour and

anterior laminæ very dark brown. In C. the sutural laminæ are paler anteriorly, the rim being nearly white.

The number of slits is too variable to make them of any value for descriptive purposes.

The shell of *Acanthopleura granulata* is ornamented with tubercles of fair size, which on the jugum become much smaller, and arranged in more or less regular concentric lines. There is a brown band on the jugum, separated from the greyish or brown sides by a narrow white band; the colour, however, is very variable, and may be lighter or darker; the anterior and posterior valves often have a dark lateral band.

The shell of *Acanthopleura* sp., C., is too rubbed to determine accurately; certainly with tubercles on the lateral portion of the intermediate valves and on the terminal valves; the dorsal aspect of the intermediate valves apparently smooth, with concentric lines of growth; colour pale buff, with a darker band along the jugum and at the sides.

Girdle.—Acanthopleura granulata, A. and B., crowded spines of variable thickness, a great number being considerably larger than the others: the usual arrangement of bands being a lateral black band for each of the first two valves, a broad black band for the fifth and sixth, and one for the eighth—or four bands on each side; the interspaces being greyish, with occasional patches of black, the most constant of which is a variable band opposite the seventh valve. *Acanthopleura* sp., C., the spines are much finer, shorter, and more uniform than in the former. There is a lateral black band for each of the first, second, seventh, and eighth valves, a broad band for the fifth and sixth, and traces for the third and fourth. The shells and girdles of *Acanthopleura spiniger* and *Acanthopleura incana* have already been described.

In all the West Indian forms the spines extend from the girdle as a narrow band between the valves; this can, however, only be seen after the removal of the valves. The same occurs in *Acanthopleura spiniger* (Challenger), but not in quite so marked a degree, and not at all in the Red Sea specimens, nor in *Acanthopleura incana*.

From the above analyses it seems clear that there are at least two species of the West Indian *Acanthopleura*.

In Gmelin's edition of the Systema Naturæ, two closely allied species are described on p. 3205, viz., No. 16, *Chiton granulatus:* "Ch. piceus supra planus, punctis elevatis numerosis in series digestis, limbo lato coriaceo spinoso: areis nigris albisque alternis. Chemnitz, Conchyl., vol. viii. pl. xcvi. fig. 806. *Habitat* in Oceano americano, *valvis* 8, *rarius* 7." No. 17, *Chiton piceus:* "Ch. testa octovalvi supra glabra picea nigro albidoque varia. Chemnitz, Conchyl., vol. viii. pl. xcvi. figs. 807–810; Chemnitz, Chit., pl. ii. figs. 6, 6 a, b, c. *Habitat* in Mari americano et rubro, granulato affinis, intus medio niger, ad latera virescens, maculis dorsi nigris et maculis fasciis venisque albidis aut virescentibus alternis, *valvis rarius*, 7 aut 6."

Gmelin considered these as distinct species, but the smoothness of the surface of the latter was almost certainly simply the result of erosion. The coloration of the under surface

accurately corresponds with specimen C. in the above tables. I have no hesitation in identifying *Chiton granulatus*, Gmel., with the *Acanthopleura* which appears to be so common at the Barbadoes (A. and B., *ante*); and it is equally probable that *Chiton piceus*, Gmel., is identical with my specimen C. I feel some hesitation in retaining that name for it; as, judging from its geographical distribution, Gmelin's form would include two distinct species. Blainville, however (Dict. des Sci. Nat., vol. xxxvi.), gives only the American locality, and, as has been above noted, the Réd Sea species differs from any West Indian form.

Blainville[1] gives Gmelin's two species, and describes on p. 544 a new species, *Chiton convexus*, which is of very doubtful value.

Sowerby gives the following synonymy for *Chiton piceus* in the Conch. Illust., p. 1 :— "*Chiton convexus, Chiton granulatus, Chiton gemmatus, Chiton tuberculatus, Chiton unguiculatus, Chiton zonatus* (auctorum);" these are all Blainville's species (*loc. cit.*). Reeve[2] follows Sowerby in the synonymy, but it is not clear what species he intends, as in the Conchologia Iconica[3] *Acanthopleura spiniger* is referred to as *Chiton piceus*. Gray[4] refers to this species as "*Maugeria picea*, West Indies."

Reeve describes *Acanthopleura occidentalis* from the West Indies,[5] which is probably one of these two forms.

Acanthopleura spiniger and its varieties can now be distinguished from the other species without much difficulty.

The posterior valves alone separate *Acanthopleura incana* from all the preceding. The Japanese and Australian specimens of this form appear to have well-marked differences. It can only be decided after an examination of a greater number of specimens than I have studied, and of examples from intermediate localities, whether these distinctions are to be considered as specific or varietal. In the former case Gould's name must be retained for the Australian form,—he describes the interior of the shell as being "red and violet, somewhat iridescent," and certainly the madder-brown and pinkish colour of my specimens offers a marked contrast to the uniform black or blackish brown of the Japanese specimens. The laminæ of insertion are relatively smaller in the Australian form, and the sculpture of the shell appears to differ slightly, but my specimens are considerably eroded.

Except for the colour of the under surface, the posterior valve of *Acanthopleura incana* very closely resembles that of *Euplaciphora petholata*, Soy., also from South Australia. There may be some connection between the two forms, but the character of the insertion plates and the nature of the girdle sufficiently separate the two genera. It should not be forgotten that Carpenter divides the whole group of Chitons into Regular and Irregular, basing his classification upon the dissimilarity between the anterior and

[1] Dict. des Sci. Nat., 1825, vol. xxxvi. p. 545.
[2] Conch. Syst., 1842, p. 11.
[3] 1847, pl. xiii. fig. 70.
[4] Guide Moll., 1857, p. 184.
[5] Conch. Icon., 1847, pl. xix. fig. 76.

posterior valves. *Acanthopleura incanus* presents us with the anomaly of a Chiton with the anterior and intermediate valves quite similar to those of the "Regular" Acanthoidea, and with a posterior valve resembling that of the "Irregular" Placiphoroidea! An inspection of Carpenter's MS. proves that even at the time of his death he had not unravelled this admittedly difficult genus to his own satisfaction.

Dr A. T. de Rochebrune has recently briefly described, without figures, the following species:—*Acanthopleura quatrefagei*,[1] n. sp., Cape of Good Hope. *Acanthopleura vaillantii*, n. sp., Suez Canal; *Acanthopleura afra*, n. sp., Cape of Good Hope and Madagascar; *Acanthopleura rawakiana*, n. sp., Rawak, New Guinea; and *Acanthopleura balansæ*,[2] n. sp., Australia and New Caledonia.

Subgenus *Francisia*, Carpenter.

"Acanthopleura: valvis partim immersis, planatis; laminis centralibus pleurifissatis; sinu lobato" (Dall, 1882).

Francisia spinosa (Bruguière).

Chiton spinosus, Bruguière, Journ. d'Hist. Nat., 1792, vol. i. p. 25, pl. ii. figs. 1, 2.
" " Sowerby, Genera of Recent Shells, 1820–25, pl. cxxxix. fig. 1; and Conch. Illust., 1840, p. 1, pl. clxxv. fig. 151.
" " Reeve, Conch. Syst.; 1842, vol. ii. p. 12, pl. cxxxiv. fig. 151; and Conch. Icon., 1847, pl. ix. fig. 51.
Mangeria spinosus, Gray, Guide Moll. Brit. Mus., 1857, p. 184.
Chiton spinosus, Adams, Genera Recent Moll., 1858, vol. i. p. 475.

Habitat.—Station 187. September 9, 1874. Lat. 10° 36′ S.; long. 141° 55′ E. Albany Island, Cape York, North Australia. 6 fathoms. Coral mud.

New Holland.

The shell has concentric lines of growth, and is roughened on the terminal valves and lateral areas, but is otherwise quite smooth. The laminæ of insertion are very large. There are about seventeen irregular slits in the anterior valve and twelve in the posterior; there is one lateral slit. The teeth are very long and finely grooved; eaves practically non-existent.

The upper surface of the shell is of a uniform black colour; the under surface of a lustrous madder pink. Insertion plates white.

[1] *Journ. de Conch.*, t. xxi. p. 42, 1881.
[2] *Bull. Soc. Philomath. Paris*, sér. 7, t. vi. pp. 192, 195, 197, 1882.

Section II.—CHITONES IRREGULARES. Irregular Chitons.

Tail plate abnormal, or with a sinus behind.

E.—Schizoidea.

Genus *Lorica*, H. and A. Adams.

Lorica volvox (Reeve).

Chiton volvox, Reeve, Conch. Icon., 1847, pl. vi. fig. 31.
„ *cimolius*, Reeve, Conch. Icon., 1847, pl. xxi. fig. 141.
Lorica cimolia, Adams, Gen. Recent. Moll., 1858, vol. i. p. 477, vol. iii. pl. liv. fig. 5.
„ „ Angas, Proc. Zool. Soc. Lond., 1867, p. 224.

Habitat.—Port Jackson, Sydney. 6 to 15 fathoms.

Mr Angas first united these two species, but retained the name for the second form instead of for the one first described. It is a very well-marked species, of large size.

Other localities are Watson's Bay; Middle Harbour; Port Lincoln, South Australia and Tasmania.

Genus *Schizochiton*, Gray.

Schizochiton incisus (Sowerby).

Chiton incisus, Sowerby, Proc. Zool. Soc. Lond., 1841, p. 61.
„ „ Reeve, Conch. Icon., 1847, pl. viii. fig. 43.
„ *elongatus*, Reeve, Conch. Icon., 1847, pl. viii. fig. 40 a and b.
Schizochiton incisus, Gray, Proc. Zool. Soc. Lond., 1847, p. 169, and Guide to Moll., 1857, p. 183; Shuttleworth., Bern. Mittheil., 1853, p. 68; H. and A. Adams, Genera Recent Moll., 1858, vol. i. p. 477, vol. iii. pl. liv. figs. 6, 6 a; E. A. Smith, Voyage "Alert," 1884, p. 82.

Habitat.—Samboangan, Philippines. Three specimens.

Island of Zebu, Philippines (Cuming); Raine Island, Torres Strait (Ince); Claire-mont and Bird Islands, North-East Australia (Coppinger).

Mr Smith has adopted the somewhat obvious suggestion of Carpenter (*fide* a tablet in the British Museum), that *Schizochiton incisus* and *Schizochiton elongatus* are forms of the same species. He has also given a short description of Dr Coppinger's specimens. The most remarkable feature of this species is the possession of a series of well-developed eyes along the ridges of the shell, for such the "minute blackish beads" have been demonstrated to be by Professor Moseley,[1] in whose paper will be found an account of the structure of these remarkably situated organs and of the branching papillæ (Megalæsthetes and Micræsthetes) which occur in the shells of other species of Chitons.

[1] *Quart. Journ. Micr. Sci.*, N. S., 1885, vol. xxv. p. 37.

F.—Placiphoroidea.

Plaxiphora, Gray.

Dall subdivides Gray's genus *Plaxiphora* (*Placiphora*, Carpenter and Dall) into three subgenera in addition to the genus proper, viz. (*a.*) *Fremblya*, H. Adams; (*b.*) *Euplaciphora*, Shuttleworth; and (*c.*) *Guildingia*, Carp. They all agree with the genus proper in having the insertion plates regular, ribbed behind; numerous slits in the anterior valve, one in the intermediate and none in the posterior valve, and small eaves. In *Plaxiphora* the teeth are slightly propped; there is a small sinus, and the sutural laminæ are joined; swollen ribs; girdle hairy, with regular pore-tufts. The type is *Plaxiphora carmichaelis*, Gray (=*Plaxiphora setiger*, King, from Patagonia). In *Fremblya* the teeth are excurved, the sinus broad and shallow, girdle as above, the outbending of the teeth being the distinctive character. The type is *Fremblya collei*, H. Adams, from Australia. In *Euplaciphora* the teeth are sharp, the sinus broad, deep, and spongy, the girdle with crowded hairs, but without pores. Type, *Euplaciphora petholata*, Sow., from South Australia. In *Guildingia* the teeth are sharp, very long, and smooth; the sinus broad, deep, spongy; the girdle encroaches on the valves, with pore-tufts and emarginate posteriorly. Type, *Guildingia obtecta*, Carp., from New Zealand, Mus. Cuming, No. 45.

As I have not the opportunity of critically examining these subgenera, I shall, for the present at all events, refer all the three species collected by the Expedition to the genus *Plaxiphora*. Carpenter admitted that a main distinction between this genus and *Euplaciphora* lay in the absence of sutural tufts in the girdle of the latter, but he described in his MS. *Plaxiphora simplex*, n. sp., as *Euplaciphora*, although, as is shown on Plate III. fig. 13 *b*, sutural tufts are present; and in the type-species of *Plaxiphora*, *Plaxiphora carmichaelis*, the numerous scattered tufts only imperfectly take on a sutural arrangement.

The species of this genus are confined to the Southern Hemisphere.

Plaxiphora carmichaelis (Gray)

Chiton carmichaelis, Gray, Spicilegia Zool., 1828, p. 6, and Wood, Index Test., Suppl., 1828, p. 1, pl. i. fig. 10.

„ *setiger*, King, Zool. Journ., 1830–1831, vol. v. p. 338, and Sowerby, Conch. Illust., 1841, No. 95, fig. 17.

„ *fremblii*, Broderip, Proc. Zool. Soc. Lond., 1832, p. 28, and Sowerby, Conch. Illust., 1841, No. 95, fig. 4.

„ *biramosus* (?), Quoy and Gaimard, Durville, Voy. "Astrolabe," Zool., 1834, vol. iii. p. 378; Atlas, pl. lxxiv. figs. 12–16.

„ *setiger*, Deshayes, Lamarck, Hist. Nat. Anim. s. vert., 1836, vol. vii. p. 513.

„ „ Reeve, Conch. Illust., 1842, vol. ii. p. 10, pl. cxxxi. fig. 4, and Conch. Icon., 1847, pl. ix. fig. 48a; var. *β*, fig. 48b (= *Plaxiphora fremblii*).

Plaxiphora carmichaelis, Gray, Proc. Zool. Soc. Lond., 1847, p. 68, and Guide Moll. Brit. Mus., 1857, p. 186.
Chiton setiger, Gould, Wilkes' U.S. Explor. Exped., 1852, vol. xii. p. 330, fig. 425 a, b.
Placiphora carmichaelis, Dall, Proc. U.S. Nat. Mus., 1878, p. 80.

Habitat.—Station 306A. January 2, 1876. Lat. 48° 27′ S., long. 74° 30′ W. South Chili. 345 fathoms. Blue mud. Bottom temperature 46°.

The following three species of Blainville's, *Chiton albidus*, *Chiton raripilosus*, and *Chiton costatus*,[1] are regarded by Sowerby and Gray as synonyms of this species, but neither propose to adopt one of Blainville's names. The second species is from an unknown locality, the other two apparently from South Australia. One or more of these may perhaps be more nearly allied to *Plaxiphora petholata*, Sow.

The *Chiton biramosus* of Quoy and Gaimard is certainly closely allied to this species, if, indeed, it be distinct. They obtained it from Tasman Bay, New Zealand.

All the other specimens are from the south-west of South America, Tierra del Fuego, and Strait of Magellan; var. *fremblii* is from Valparaiso, Chili, except Gould's, which came from "Orange Harbour," and Gray's, which is stated to come from the Cape of Good Hope. This is probably an error.

Plaxiphora simplex (Carpenter) (Pl. III. figs. 13, 13*a*–13*c*).

Euplaciphora simplex, Carpenter MS.

"Testa *Euplaciphoræ modestæ* simili; sed magis elevatâ, longiore; loricâ rudi, fusco-purpureo varie maculatâ; jugo rotundato; mucrone postico, planato; ar. lat. vix definitis; valvis rotundatis, suturis magnis; totâ superficie læviore, sæpius detritâ, subspongiosâ; intus, valvis post. laminis satis elevatis, satis sinuatis; valvis ant. 8—valvis cent. 1—fiss.; dent. acutis, vix suffultis; subgrundæ curtis, spongiosis; sinu valde angusto, lævi, planato. Zonâ pilulis minimis confertissimis quasi spongiosâ, pilis corneis longioribus ad suturas et sparsim instructâ.

"Long. 1·35, lat. ·7, div. 120°. Variat., long. 1·1, lat. ·65, div. 100.

"*Habitat.*—Tristan da Cunha (Mus. Cum., No. 2691)."

Habitat.—Tristan Island, Tristan da Cunha. Shore.

Station 135C. Off Nightingale Island, Tristan da Cunha. 100–150 fathoms.

Dr P. P. Carpenter unfortunately died without publishing this definition of his species, and having, through the courtesy of Dr Dall, had access to his manuscript, I have not hesitated to transcribe his account, as it is only right that he should have all the credit of his research. The specimens in the British Museum, to which he alludes, bear his manuscript name. The *Euplaciphora modesta*, to which Carpenter alludes, is a new species,

[1] Dict. des Sci. Nat., 1825, vol. xxxvi. pp. 547, 548.

thus described in his MS.: "Testa *Euplaciphoræ petholatæ* formâ, colore et indole simillimâ; sed ar. lat. minus definitis; sculpturâ, nisi punctulis undique creberrimis, nullâ; etc. *Habitat.*—Australia, Mus. Cum., No. 67; var. 66 also from Australia."

The four specimens collected by the Expedition are greatly corroded, and were overgrown with Nullipore; on the removal of the latter what little remains of the original surface of the shell is exposed.

Shell.—Smooth, simply marked with lines of growth, flat sides meeting at a variable angle.

Anterior valve.—Small, surface smooth. *Under surface* with eight slits, teeth fairly long, smooth and sharp; eaves short.

Intermediate valves.—*Central area:* smooth, flat. *Lateral areas:* inconspicuous, with two or three very faint radiating ridges. *Under surface:* with a median horizontal rib-like swelling; sutural laminæ broad, but not deep; jugal sinus wide and shallow; one lateral slit; eaves short.

Posterior valve.—Very small and flat, greatly corroded; umbo apparently flat and terminal; posterior border thickened. *Under surface:* sutural laminæ as in intermediate valves, but the jugal sinus is comparatively narrow and deep; slits and teeth absent; posterior border much swollen.

Girdle.—Very thick and fleshy, upper surface having a spongy appearance, owing to being beset with very short horny spines, which are scarcely raised above the surface; there are tufts of longer spines, three to nine in each tuft, opposite the sutures of the valves; these have no definite position round the anterior valve. Situated outside these are numerous scattered similar tufts, usually somewhat smaller in size, which pass into an imperfect peripheral fringe of spines (see Pl. III. figs. 13, 13*a*).

Colour.—All the valves of a uniform dark brown, with a pale (lilac) narrow triangular band along the jugum of the intermediate valves (and anterior area of the posterior valve).

Under surface of all the valves of a bluish green colour; laminæ of insertion paler.

Girdle.—Upper surface dark brown; under surface dusky orange.

Size.—Length, 40 mm.; breadth, 25 mm.; height, 10 mm.; angle, 125° to 135° (two specimens from 100 to 150 fathoms). Length, 25 to 35 mm.; breadth, 14 to 17 mm.; height, 8 to 9 mm.; angle, 90° to 110° (two shore specimens).

Plaxiphora carpenteri, n. sp. (Pl. I. fig. 8, Pl. III. figs. 8*a*–8*g*).

Habitat.—Tristan da Cunha.

Shell.—Smooth, the sides meeting at an angle of 105°.

Anterior valve.—With eight radiating ridges, not counting the swollen posterior borders. Numerous concentric minor ridges cause these ridges to be rugose. *Under surface* with nine slits, two being very close together; eaves short.

Intermediate valves.—Central area: smooth, with fine lines of growth; no distinct keel. *Lateral areas:* prominent, concentrically rugose, with a beaded ridge along the anterior border, and, to a less extent, along the posterior border. *Under surface* with a median horizontal rib-like swelling; sutural laminæ broad, but not deep; jugal sinus shallow; one lateral slit; eaves short.

Posterior valve.—Anterior area so large as to reduce the posterior area to a minimum; smooth; umbo minute, nearly terminal. *Posterior area* merely forms a concentrically grooved thickening of the posterior border of the valve. *Under surface:* sutural laminæ as before, but the jugal sinus is comparatively narrow and deep; slits and teeth absent; the posterior border is greatly swollen.

Girdle.—Closely beset with very minute horny spines. The specimen had been dried when I received it, and none of the longer spines, characteristic of other species, are observable; but I think I can discern traces of small sutural tufts.

Colour.—Anterior valve: a median triangular area, with the apex at the umbo, is of a kind of chocolate colour, which is variegated with minute zigzag grey lines; the lateral spaces are of a dark slate colour.

Intermediate valves.—Central area: Jugum pink; greenish towards the umbo when worn down. *Pleura* dark greenish brown, with irregular longitudinal green bands. *Lateral areas:* madder brown, blotched with brown.

Posterior valve.—Anterior area resembling the central areas; *posterior border* pinkish.

Under surface of all the valves pale bluish green; laminæ of insertion white.

Girdle.—Reddish brown.

Size.—Length, 14 mm.; breadth, 9 mm.; height, 4 mm.

This species, which is the handsomest of the genus, is dedicated to the memory of Dr P. P. Carpenter, whose great knowledge of the group is fully acknowledged by all those who work after him.

The sculpture of the shell, slight as it is, is sufficient to characterise this species.

G.—Mopaloidea.

Genus *Acanthochiton* (Leach), Herrmannsen.

Acanthochiton garnoti (Blainville).

Chiton garnoti, Blainville, Dict. des Sci. Nat., 1825, vol. xxxvi. p. 552.
„ „ Quoy and Gaimard, Voyage de l'Astrolabe, 1834, vol. iii. p. 401, pl. lxxiii. figs. 9–14.
„ *danielli*, Sowerby, Conch. Illust., 1841, p. 7, No. 91, pl. xliv. fig. 48.

Habitat.—Sea Point, near Cape Town. Shore. Seven specimens.

Sowerby (*loc. cit.*, p. 7) erroneously gives Peru as the locality of *Acanthochiton garnoti*. He says: "C. hirudiniformis, Sow., Zool. Proc., 1832, p. 59, Con. Illus., f. 23, 48, 142,

Garnoti, Bl. Peru. Ch. Danielli, Con. Illust., f. 48, which comes from the Cape of Good Hope, may prove to be a distinct species, but all our specimens are much worn." I have no means for deciding whether *Acanthochiton hirudiniformis* is a synonym of *Acanthochiton garnoti*, but Gray[1] is almost certainly incorrect in making *Acanthochiton zelandica*, Quoy and Gaim., a synonym. I am not acquainted with "*Acanthochiton hookeri*, Gray, Dieffenbach, p. 262."

H.—Cryptoidea.

No representatives of the Cryptoidea were collected by the Challenger Expedition.

I.—Chitonelloidea.

As there exists a certain amount of uncertainty concerning the generic subdivisions of this group, the following account may perhaps tend to elucidate the subject.

Burrow[2] published a description of *Cryptoconchus larvæformis*, an unpublished name which Blainville had given to a species in the British Museum, and of which one specimen is still extant (*fide* E. A. Smith).[3] The generic name of *Cryptoconchus* was at the same time given to *Cryptoconchus porosus*, Blainville, and the latter being generically distinct from *Cryptoconchus larvæformis* retains the generic appellation; being the first of the two species described and more answerable to the name.

Blainville[4] says, "Cryptoplax (*Moluscart.*): Sous-genre de l'ordre des oscabrions, établi par M. H. de Blainville, dans le supplément à l'Encyclopédie d'Edimbourg, pour des espèces qui ont tons les principaux caractères de ce genre, mais chez lesquelles le corps, etroit alongé," &c. &c. But he does not refer to the name *Cryptoconchus* in Burrow's Elements. He says only two species are known, "*Cryptoplax larviformis*" and "*Cryptoplax depressus;*" and continues, "Dans ces deux espèces, dont on ignore la patrie il y a de chaque côté du dos une série de faisceaux de soie parfaitement symétriques." I have been unable to find the Encyclopædia article referred to, and Mr E. A. Smith informs me that he is unable to determine what is the *Cryptoplax depressus* of Blainville—it may be *Choneplax strigatus*, Sow.

Lamarck[5] describes *Chitonellus lævis* and *Chitonellus striatus*. To which Deshayes added in the second edition,[6] *Chitonellus fasciatus*, Quoy and Gaim., and *Chitonellus oculatus*, Quoy and Gaim.

[1] *Proc. Zool. Soc. Lond.*, 1847, p. 70.
The Elements of Conchology, 1815, p. 191.
[2] Rep. Zool. Collect. H.M.S. "Alert," 1884, p. 86.
[4] Dict. des Sci. Nat. Paris, 1818, tom. xii. p. 124.
[5] Histoire Naturelle des Animaux sans Vertèbres (ed. 1), 1819, vol. vi. p. 317.
[6] *Ibid.*, 1836, vol. vii. p. 482.

Blainville[1] attributes the genus *Oscabrelle* to Lamarck, with *Chitonellus lævis* as its type, and the genus *Chitonelle* to himself, with *Chitonelle larvæformis*.

These facts may be tabulated thus:—

1815 *Cryptoconchus porosus*, n. sp., Blainv. (Burrow), genus and species retained.
„ „ *larvæformis*, n. sp., Blainv. (Burrow), species retained.
1818 *Cryptoplax larviformis*, Blainv. (Blainville), genus retained.
„ „ *depressus*, n. sp. (Blainville), species unrecognised.
1819 *Chitonellus lævis*, n. sp. (Lamarck), species most probably a synonym for *Cryptoplax larvæformis*.
„ „ *striatus*, n. sp. (Lamarck), species retained.
1825 *Oscabrelle lævis*, Lam. (Blainville).
„ *Chitonelle larvæformis*, Blainv. (Blainville).
1836 *Chitonellus lævis*, Lam., *Chitonellus striatus*, Lam., *Chitonellus fasciatus*, Quoy and Gaim., *Chitonellus oculatus*, Quoy and Gaim. (Deshayes).

From this it is clear that *Cryptoplax* takes precedence of *Chitonellus* and must be used for pore-bearing species, *Cryptoplax larvæformis*, Blainv., being the type species. The name *Chitonellus* may be retained for those species without pores if it should be deemed advisable to maintain this distinction.

I find that the late Dr P. P. Carpenter had arrived at a similar conclusion, as in his MS. he states, "There being two names in use for the group, I have kept Lamarck's name (the best known) for the non-porous and Blainville's for the pore-bearing species."

Owing to the fact of pores having now been proved to occur in *Chitonellus striatus* (see p. 40), all the species mentioned above must be relegated to the genus *Cryptoplax*, with the doubtful exception of *Chitonellus oculatus*.

The small size of the pores in this group and their tendency to disappear inclines me to consider that their presence or absence taken alone is a totally insufficient character upon which to found a generic distinction.

There is no need to enter into a discussion of any later generic synonymy, as none of the proposed names can stand.

Genus *Cryptoplax*, Blainville.

Cryptoplax larvæformis, Blainville (Pl. III. figs. 12*a*–12*m*).

Cryptoconchus larvæformis, Blainville, Burrow's Elements of Conchology, 1815, p. 191, pl. xxviii. figs. 2–4.
Cryptoplax larviformis, Blainville, Dict. des Sci. Nat., 1818, vol. xii. p. 124.
Chiton chitonellus, Blainville, Dict. des Sci. Nat., 1825, vol. xxxvi. p. 550.
„ ; *vermiformis*, Blainville, Dict. des Sci. Nat., 1825, vol. xxxvi. p. 553.
Chitonelle larvæformis, Blainville, Manuel de Malacologie, 1825, p. 603, pl. lxxxvii. fig. 6.
Chiton fasciatus, Quoy and Gaimard, Voyage de l'Astrolabe, Zool., 1834, vol. iii. p. 408, pl. lxxiii. figs. 21–29.
Chitonellus fasciatus, Deshayes, Lamarck's Hist. Nat. Anim. s. Vert., 1836 (ed. 2), vol. vii. p. 482.

[1] Manuel de Malacologie, 1825, p. 603.

Chitonellus lævis (*l*), Lamarck, Hist. Nat. Anim. s. Vert., 1819 (ed. 1), vol. vi. p. 317; Blainville, 1825 (*loc. cit.*), p. 603, pl. lxxxvii. fig. 5; Deshayes in Lamarck, 1836 (*loc. cit.*), p. 481; Reeve, Conch. Syst., 1842, pl. cxxxv. fig. 2 (not of Reeve, Conch. Icon., 1847, fig. 1, which is *Choneplax strigatus*, Sow.).

„ *fasciatus*, Reeve, Conch. Syst., 1842, vol. ii. pl. cxxxv. figs. 3, 4 (not fig. 5, which is *Chitonellus oculatus*).

„ „ Reeve, Conch. Icon., 1847, fig. 2 a, b.

Not *Chitonellus larvæformis*, Reeve, Conch. Icon., fig. 3, which is *Chitonellus burrowi*; Smith, Report Zool. Collect. of H.M.S. "Alert," 1884, p. 85.

Chitonellus fasciatus, Gould, U.S. Explor. Exped., 1852, vol. xii. p. 333; Atlas, pl. xxviii. figs. 429, 429a.

Chiton eruciformis, Sowerby, Genera Recent and Fossil Shells, 1820–1825, No. 12, pl. cxxxix. fig. 5.

Cryptoplax fasciata + *larviformis*, Adams, Genera of Recent Mollusca, 1858, vol. i. p. 484; vol. iii. pl. lv. figs. 6, 6a.

Habitat.—Kandavu, Fiji. Shallow water.

Tongatabu, Friendly Islands (Quoy and Gaimard); Dalaquete, Zebu, Philippines (Cuming).

There can be little doubt that *Chitonellus larvæformis*, Blainv., is the same species as *Chiton fasciatus*, Quoy and Gaim., which latter has been copied and redescribed by Lamarck, Reeve, Gould, and others. E. A. Smith has recently shown that the *Chitonellus larvæformis* of Reeve is not that species, but a new one which he named *Chitonellus burrowi*; Mrs Gray's figures of *Cryptoplax larviformis* (*sic*) [1] are copied from Blainville, and those of *Cryptoplax fasciatus* [2] from Quoy and Gaimard, and J. E. Gray himself [3] referred to these as separate species. *Chitonellus lævis*, Lam., is believed by E. A. Smith to be this species. No mention is made of tufts of spines ("pores"). Blainville's figure in the "Manuel" of *Chitonellus larvæformis* is very rough, and there is no indication of the transverse bands on the girdle, but he figured the tufts, and being aware of their existence in one form, he might be expected to look out for them in the other, hence his silence on that point is worthy of note. Deshayes, in the second edition of Lamarck's work, admits Blainville's figure as a representation of *Chitonellus lævis*, and he ignores the pores. Whatever this species may prove to be, Reeve [4] is clearly in error in referring *Chiton strigatus*, Sow., to it; in the Conch. Syst.[5] he names Sowerby's species *Chitonellus strigatus*. Dall [6] refers to this as the type species of the genus *Choneplax* of Carpenter. E. A. Smith is undoubtedly correct in regarding *Chiton eruciformis*, Sow., as a synonym of this species. Sowerby did not believe in the generic distinction of *Chitonellus* from *Chiton*, so he re-named what he believed to be *Chitonellus lævis*, Lam., as *Chiton eruciformis*, as, though he does not say so, the specific name was pre-occupied (*Chiton lævis*, Penn.). This figure of the detached valves is copied in Reeve's Conch. Syst., where it is referred back to *Chitonellus lævis*, Lam.

[1] Figures of Molluscous Animals, 1859, vol. ii. pl. clxxxix. figs. 4, 4a. [2] *Ibid.*, figs. 5, 5a.

[3] Guide to the Systematic Distribution of Moll. in the British Museum, 1857, p. 187.

[4] Conch. Icon., fig. 1. [5] Pl. cxxxv. fig. 6. [6] *Proc. U.S. Nat. Mus.*, 1881, p. 288.

Quoy and Gaimard (*loc. cit.* p. 409) state: "Il est probable que neuf spiracules accompagnent les valves de chaque côté; mais nous n'avons jamais pu en voir cinq." As they were on their guard we must admit their statement as being beyond doubt; of course they figure only five.

In one of the specimens collected by the Expedition, the anterior five pairs of tufts are readily seen, as is also the sixth tuft on the right side, but that on the left side is not visible, nor the seventh or eighth pairs. Their apparent absence may, however, be possibly accounted for by the fact that the skin is much wrinkled in the places where they might be expected to occur; but this does not apply to the interspace between the last two valves, which is quite smooth and yet exhibits no trace of a tuft.

Deshayes (*loc. cit.* Lamarck, ed. 2, p. 482) says of *Chiton fasciatus*, Quoy and Gaim., "Sur l'extrémité antérieure on remarque de chaque côté cinq ocelles d'un brun assez foncé."

Reeve figures the pores,[1] but in the otherwise much better figure of the same species (*Chiton fasciatus*) in the Conch. Icon., fig. 2b, they are omitted, as is also the case in fig. 2a, and no mention is made of them in the text. The normal number of pores is present in the British Museum specimens, hence Reeve's silence on this point can only be attributed to carelessness.

Gould refers his specimen to *Chiton fasciatus*, Quoy and Gaim. He is probably correct in his identification, but his account is imperfect and does not correspond with the figures. He makes no mention of pores.

The brothers Adams[2] define the genus *Cryptoplax* as having the "mantle spinulose, encircled with a series of setigerous pores." They include *Cryptoplax striatus* and *Cryptoplax oculatus* and others in the same genus, although pores have not heretofore been shown to occur in the former. They give a fair figure of *Cryptoplax fasciatus*, with the nine lateral pores and a supernumerary one in front.

In most cases the silence of authors concerning the presence or absence of pores or tufts is not to be taken as an argument for their absence, as they are always small and are often scarcely, if at all, visible in old and rubbed, dry specimens.

The only conclusion at which we can arrive at in this species is that normally nine pairs of tufts are present, but that in some specimens more or fewer of the posterior pairs may be absent. This further leads us to the supposition that they may be entirely absent, although we have at the present time no direct evidence in support of the last alternative.

Cryptoplax striatus (Lamarck) (Pl. I. fig. 9, Pl. III. figs. 9*a*–9*m*).

Chitonellus striatus, Lamarck, Hist. Nat. Anim. s. vert. (ed. 1), 1819, vol. vi. p. 317, and (ed. Deshayes) 1836, vol. vii. p. 481.

" " Sowerby, Genera of Shells, 1820–1825, No. 12, pl. cxxxix. fig. 4.

[1] Conch. Syst., vol. ii. pl. cxxxv. fig. 4.

[2] Genera of Recent Mollusca.

Chiton striatus, Blainville, Dict. des Sci. Nat., 1825, vol. xxxvi. p. 551.
Chitonellus striatus, Sowerby, Conch. Illust., 1841, p. 7, No. 85, fig. 62.
„ „ Reeve, Conch. Syst., 1842, vol. ii. pl. cxxxv. fig. 1; Conch. Icon., 1847, fig. 4 a, b.
„ *gunnii*, Reeve, Conch. Icon., 1847, fig. 5.
„ *rostratus*, Reeve, Conch. Icon., 1847, fig. 6.
„ *oculatus*, Reeve, Conch. Icon., 1847, fig. 7 a, b (not of Quoy and Gaimard).
Cryptoplax striata + gunnii + rostrata, Adams, Genera of Recent Mollusca, 1858, vol. i. p. 484.
„ „ Angas, Proc. Zool. Soc. Lond., 1867, pp. 224, 225.
Chitonellus striatus, Smith, Report Zool. Collections H.M.S. "Alert," 1884, p. 84.

Habitat.—Port Jackson, Sydney. 6 to 15 fathoms.

This form is the best known of the group, but even it has suffered at the hands of systematic conchologists. Reeve, as Angas and E. A. Smith have previously suggested, has increased the synonymy of the species by three names, viz., *Cryptoplax gunnii*, *Cryptoplax rostratus*, and *Cryptoplax oculatus*. E. A. Smith recognises in the first of these a fairly well-marked variety of *Cryptoplax striatus*, which occurs in Tasmania and South Australia.

The figure in Sowerby's Genera, and which is copied in Reeve's Conch. Syst., is not at all characteristic, as the three posterior valves are placed so far apart; but Deshayes, in the second edition of Lamarck's work, accepts it as representing this species.

Although this species has been described and figured so often, it has, so far as I am aware, hitherto escaped conchologists, that a series of "pores" exists, which have the same position as those in *Cryptoplax larvæformis*. It is, however, easy to understand how this has been the case: the number and size of the spines in the pores, in the latter species, vary considerably. They arise from a very shallow depression, which appears under a lens as a small roundish bare spot, but the white colour of the spines causes them to be more conspicuous than they would otherwise be. In *Cryptoplax striatus* the white spines very rarely occur, and when they do they are very small; the bare shallow depressions have much the same character as in the other species; they are, however, often very hard to detect, and even appear to be of irregular occurrence. In all the eight spirit specimens I have examined, I find that the four anterior pores, and those between the first and second valves, are universally present, and I could distinguish them between the second and third, and third and fourth valves, in nearly all. The hinder pores are more difficult to make out, and only in two cases could I satisfy myself of their occurrence between the seventh and eighth valves. The main reason of their having been overlooked is due to the fact that dried specimens alone have almost invariably been studied, and in these the pores disappear, but very occasionally they can be traced when they are carefully looked for. The presence of these pores breaks down a distinction which has been made between pore-bearing and aporous forms.

Cryptoplax oculatus (Quoy and Gaimard) (Pl. I. fig. 10, Pl. III. figs. 10*a*-10*m*).

Chiton oculatus, Quoy and Gaimard, Voyage de l'Astrolabe, Zool., 1834, vol. iii. p. 410, pl. lxxiii. figs. 37, 38.

Chitonellus oculatus, Deshayes, Lamarck's Hist. Nat. Anim. s. vert., 1836 (ed. 2) vol. vii. p. 482.

Chitonellus fasciatus, Reeve (not of Quoy and Gaimard), Conch. Syst., 1842, vol. ii. pl. cxxxv. fig. 5 (only).

Not *Chitonellus occulatus*, Reeve, Conch. Icon., 1847, figs. 7a, 7b (= *Cryptoplax striatus*).

Habitat.—Samboangan, Philippine Islands. 10 fathoms.

"Chiton, corpore parvo, æqualiter villoso, roseo, duabus fasciis nigris cincto; valvis glaucis, longitudinaliter sulcatis; tribus anticis ovatis, pillis nigris et albis cinctis.

"Petite espèce qui se distingue de la précédente [*Chitonellus fasciatus*, Quoy and Gaim.], ainsi que des deux indiquées par M. de Lamarck [*Chitonellus lævis* and *Chitonellus striatus*], par sa forme moins cylindrique, ses deux extrémités moins obtuses, plus aplaties; par son corps uniformément couvert de soies plus longues et plus serrées que dans les espèces ci-dessus; enfin par ses trois premières valves, ovalaires, glauques, entourées d'un cercle de soies noires, et d'un autre plus extérieur de blanches, ce qui donne une apparence d'yeux à ces pièces; les autres, plus rétrécies, séparées, onguiculées, sont rouge-brun. Toutes, moins la première, sont sillonnées parallèlement en long, avec un triangle lisse au milieu. Il est probable que leur lame d'insertion est la même que dans l'Oscabrion fascié, ce dont nous n'avons pas voulu nous assurer, pour ne pas gâtes le seul individu que nous possédons. Sa couleur est rougeâtre, avec deux bandes noires transversales confluentes sur le dos. Le dessous est jaunâtre. La bouche est entourée d'un voile ovalaire, frangé. Les branchies occupent un peu moins que le tiers postérieur du corps; elles ont chacune vingt lamelles.

"Nous croyons que cet Oscabrion provient de la Nouvelle-Guinée ou de Vanikoro.

"*Dimensions.*—Longueur, 2 pouces, 6 lignes; circonférence, 1 pouce, 5 lignes."

It is very strange, with such a good description as the foregoing of the external appearance of this handsome form, that Reeve and other conchologists should have relegated other forms to this species. In no systematic work or collection of specimens which I have seen has this species been properly identified. Externally, *Cryptoplax oculatus* bears no resemblance to *Cryptoplax striatus*, with which Reeve confounded it, but it does resemble *Cryptoplax larvæformis* in many respects, and it would be very difficult, on a merely superficial examination, to distinguish between rubbed specimens of the two forms. I have seen undoubted examples of *Cryptoplax oculatus* identified as *Cryptoplax larvæformis* in more than one public museum; and Reeve himself figures[1] this species, with the characteristic border to the anterior valves, and the two median dark bands. His colouration is, however, very erroneous; thus with all the species before him, Reeve figures *Cryptoplax oculatus* as *Chitonellus fasciatus* (*Cryptoplax larvæformis*),

[1] Conch. Syst., vol. ii. pl. cxxxv. fig. 5.

in the Conch. Syst., and describes and figures *Cryptoplax striatus* as *Chitonellus oculatus* in the Conch. Icon. !

Mr E. A. Smith[1] states that he cannot identify any specimen in the British Museum with the species in question; but two specimens, at least, from the Friendly Islands occur in that collection. Mr Smith has kindly sent me a sketch of the isolated valves of one of these specimens, which I find perfectly corresponds with Pl. III. figs. 10*a*–10*m* of this Report.

Dr P. P. Carpenter in his MS. says—"The *oculatus* of Reeve appears to me a distinct species [from *Chiton oculatus*, Quoy and Gaim.]. He says nothing about pores."

Cryptoplax burrowi (E. A. Smith) (Pl. III. figs. 11*a*–11*m*).

Chitonellus larvæformis, Reeve (non Blainville), Conch. Icon., 1847, fig. 3.
„ *burrowi*, E. A. Smith, Report Zool. Collect. H.M.S. "Alert," 1884, p. 85.

Habitat.—Port Adelaide (Reeve); Straits of Macassar (Captain Belcher); Port Molle (Coppinger). All in the British Museum.

I have only to add to the description of this species, as emended by Smith, that nine pores are present on the girdle on each side in the normal position. On my inquiring specially on this point, Mr Smith kindly re-examined his specimens and informed me by letter that "*Chitonellus burrowi* has pores, and is therefore a *Cryptoplax*. There is no trace of them externally, and they are only discernible by removing the outer scaly coat; they are then seen (but not distinctly as in the other species) upon the white skin beneath in just the same position and to the same numbers as in *Cryptoplax larvæformis* and *Cryptoplax striatus*."

As the existing descriptions give a sufficiently accurate and recognisable account of the external appearance of the four species of *Cryptoplax* alluded to above, it would be superfluous to re-describe them. The appearance of the detached valves has not, however, been previously described, and it merits careful attention, since, as will be seen on referring to Pl. III. figs. 9–12, each species can be readily identified by even a single isolated valve.

There is in *Cryptoplax* a greater dissimilarity between the intermediate valves than occurs in other Chitons. In most other forms the second valve differs from the succeeding by being relatively much deeper (*i.e.*, longer), but otherwise it has the same general appearance as the other valves. In *Cryptoplax* the first three valves are usually much larger than the remainder. This is especially the case in *Cryptoplax larvæformis*. In *Cryptoplax striatus* the third and succeeding valves are pretty much of the same size, whereas in the other three species the last four valves are considerably smaller. This statement merely refers to the exposed portion of the valves. In *Cryptoplax striatus* all the valves may overlap or the last four may be slightly separated. The other species

[1] Report Zool Collections, H.M.S. "Alert," p. 85

are characterised by the last four valves being considerably isolated, the distance between them varying with the contraction or extension of that region of the body. On this subject M. de Rochebrune says: "La position isolée des valées a été tout aussi mal interprétée.; *douze espèces* de Chitonelles et *soixante et un individus* de ces espèces sont sous nos yeux, toutes à l'exception des *Cryptoplax fasciatus*, Quoy et Gaim., et *oculatus*, Quoy et Gaim., ont les valves imbriquées, et même ces deux espèces n'ont de réellement isolées que les trois valves postérieures."[1]

The valves of *Cryptoplax* consist of a small tegmentum resting like a cap upon the well-developed articulamentum. The articulamentum may perhaps be best described, for all the valves except the first, as resembling a heart-shaped or sagittate scoop, the emargination being in front. The posterior border is always entire and often greatly thickened, and it may be squared, rounded, or pointed; the bowl of the scoop may be comparatively flat, or the two sides may meet at a sharp angle. The anterior wings constitute the laminæ of insertion of the valve, and are unslit at the sides or behind in the terminal valve.

The anterior valve is oval in shape, but more or less squared posteriorly; the articulamentum is also scoop-shaped, and its posterior border may be enormously thickened; the anterior projection forms the lamina of insertion of this valve, which here alone is slit, there being three slits, forming two central broad teeth. The tegmentum may leave a larger or smaller amount of the articulamentum exposed on a dorsal view, and on the under surface it is seen to wrap round the hinder edge of the articulamentum, as is usually the case in other Chitons. The upper surface of the valve is usually much corroded, and its sculpture generally appears to consist of irregular granules and to differ slightly from that of the other valves.

The tegmentum of the remaining valves has a more or less pyriform or oval contour; it always leaves the laminæ of insertion largely exposed; posteriorly it usually forms a sort of cap or clothing to the apex or rounded end of the articulamentum, and thus is generally apparent on an under view of the valve, where it has some resemblance to the calyx of a flower. In all the valves the jugum is distinguished as a more or less smooth elongated triangle, the pleura being granular and irregularly grooved, the grooves radiating from the posterior umbo. There are no lateral areas.

The above general account will serve to explain the drawings on Plate III., and on reference to these the differences between the valves of the one species or between corresponding valves of the four species will be readily apparent, so that there is no need to enter into minute description or comparison of the several valves.

The first three and the last valves have alone been figured, as differences between the remainder and the third are of no great importance or interest; each of these valves has been drawn as seen from above, from below, and from the side. The first three species are drawn from specimens collected by the Challenger Expedition. Mr Smith kindly

[1] *Ann. des Sci. géol.*, vol. xiv. p. 11.

made a sketch of the isolated valves of a specimen of what I had previously identified as *Cryptoplax oculatus* in the British Museum, which perfectly agrees with my figs. 10*a*–10*m*, and I am also greatly indebted to him for figs. 12*a*–12*m*, which represent the detached valves of his species (*Cryptoplax burrowi*), also in the British Museum, which enables me to illustrate all the species of *Cryptoplax* known to British zoologists.

On comparing the anterior valve of the four species, it is seen that the tegmentum is relatively largest in *Cryptoplax striatus*, and smallest in *Cryptoplax larvæformis*. The posterior border of the articulamentum is greatly thickened in this species and in *Cryptoplax oculatus*, but not so in the other species. This practically holds good also for the remaining valves.

In the seven posterior valves of *Cryptoplax striatus*, the anterior apex of the jugum of the tegmentum always projects beyond the jugal sinus. In *Cryptoplax burrowi* and *Cryptoplax oculatus*, it is more or less even with it, but in the latter, at least, it slightly projects in some valves; it never does so in *Cryptoplax larvæformis*, but a narrower or wider space is always to be found in front of the tegmentum.

The relative amount of articulamentum to tegmentum, exposed on a lateral view of the posterior valve, varies considerably; it is least so in *Cryptoplax striatus*, and most uncovered in *Cryptoplax larvæformis*. *Cryptoplax burrowi* is unique in presenting the tegmentum as entirely surrounded by the articulamentum when viewed from above.

The sculpture of the three first species is, on the whole, very similar; but in *Cryptoplax larvæformis* the jugum is not definitely marked, and the surface of the shell appears to be smooth, with concentric lines of growth.

All the species, except *Cryptoplax oculatus*, are now known to be furnished normally with sutural pores, and it is most probable that they will yet be found to occur in that species.

In most of the points above mentioned, a distinct series can be traced, *Cryptoplax striatus* being the least specialised; *Cryptoplax burrowi* follows, while *Cryptoplax oculatus* is intermediate between this species and the highly specialised *Cryptoplax larvæformis*.

The British Museum contains specimens of only the four species above mentioned, and, so far as I am aware, no other species occur in other British collections. Dr A. T. de Rochebrune of the Muséum d'Histoire Naturelle in Paris, has given short Latin diagnoses of the following species:—*Cryptoplax montanoi*, n. sp., from Borneo; *Cryptoplax peroni*, n. sp., from Australia; *Cryptoplax torresianus*, n. sp., from Torres Straits; *Cryptoplax caledonicus*, n. sp., *Cryptoplax heurteli*, n. sp., and *Cryptoplax unciniferus*, n. sp., from New Caledonia.[1] It is impossible to determine what relation these species bear to each other, and to the previously described forms, until we have figures of the whole animals and of the isolated valves, in addition to full and minute descriptions. In

[1] *Bull. Soc. Philom. Paris*, sér. 7, t. vi. pp. 190, 193, 195–197, 1882.

a monograph on the fossil Chitons, Rochebrune figures [1] a "valve médiane" of *Cryptoplax oculatus*, Quoy and Gaim. From its shape it must be a second valve, but it neither agrees with the original description of the valves by Quoy and Gaimard, nor with my specimen, and we are driven to the alternative that it represents the worn valve of another species, possibly of *Cryptoplax burrowi*, Smith.

In order to render this account of the Chitonelloidea as complete as my opportunities admit of, I now append extracts from Dall's valuable paper On the Genera of Chitons.[2]

"CHITONELLOIDEA.

"Tail plate funnel-shaped. Laminæ thrown forward." [3] *Chitonellus*, Blainv. [Lam.]—Insertion plates very sagittate; 5 [*sic*] slits in anterior valve, none in middle and posterior valves; teeth very short, except at sutures; eaves distinct; gills posterior; sinus very deep and narrow; girdle, crowded bristles, no tufts; body very long; hind valves separate.[4]

The subgenus "*Cryptoplax*, Gray" [Blainv.], precisely resembles above, except that there are small tufts.

Choneplax, Carp.—Insertion plates intermediate; 5 slits in anterior valve, 1 in middle and posterior valves; teeth moderately long in front; eaves minute; gills (?); sinus very deep and narrow; girdle gravelly, with sutural tufts; valves touching.[4]

On page 288 there is the following definition of this genus:—"Animal repens, satis elongatum: valvæ expositæ parvæ, omnino contiguæ; valva postica infundibuliformis; mucro retrojectus, terminalis; laminæ ut in *Katherina* sed obsoletim fissatæ; zona Acanthochitonoidea. Type *Chiton strigatus*, Sowerby. West Indies."

Subgenus *Chitoniscus*, Carp. "49*a*. Animal et testa Choneplacis similes sed zona haud porifera."

"Based on *Chitonellus striatus* and *strigatus*, Sowerby, Conch. Ill., figs. 62, 63, which are represented as without pores. In the former the valves are separated (as in *Notoplax*); in the latter they touch (as in *Choneplax*)." As Dall truly observes, "The species need examination to confirm the accuracy of the figures."

The relationship of the Chitonelloidea to the other Chitons has always been a subject of controversy. The tendency of those modern authors who have approached the subject with what may be termed a morphological bias is to regard the former as the most primitive division of the group.

Professor Hubrecht, for example, says: "This genus [*Cryptoplax*] was long looked upon as representing a reduced stage in comparison with Chiton; different details of its organisation (branchiæ, foot, &c.) show the inconsistency of this proposition, and of all

[1] *Ann. des Sci. géol. Paris*, vol. xiv. pl. iii. fig. 14.
[2] *Proc. U.S. Nat. Mus.*, 1881, pp. 279–291.
[3] *Op. cit.*, p. 285.
[4] *Op. cit.*, pp. 289, 291.

Chitons it must certainly be looked upon as the more primitive and the more closely related to the Solenogastres."[1]

On the other hand, Dall finds "in *Chitonellus fasciatus* the representative of the most highly developed type of Chiton."[2]

The shell is remarkable in many ways, not least for the great development of the articulamentum as compared with the tegmentum, and, with the exception of three slits in the anterior valve, all the insertion plates are unslit.

The structure of the shell indicates that the Leptochitons are the most primitive forms. In the group of the Leptoidea, the sutural laminæ are small and are present in all the valves except the first, but the laminæ of insertion first appear on the terminal valves only, next on the intermediate valves also, in all cases they are small and never slit. In all other Chitons the insertion plate of the anterior valve is slit, but in *Cryptoplax* alone the lateral insertion plate is unslit. *Cryptoplax* agrees with some of the Acanthoidea and with the Schizoidea and Placiphoroidea in having the insertion plate of the terminal valve also unslit. It is probable that this condition has been independently acquired in several of these instances, whereas in *Cryptoplax* it is possibly a primitive condition.

The scales of the girdle in the Leptoidea are delicate and scattered, and in the higher members of the series (*Hanleyia* and *Hemiarthrum*) small sutural tufts appear, and in the latter, at all events, there are anterior tufts as well. The presence of sutural tufts appears to be quite irregular, even in closely allied forms; as, for instance, among the subgenera of Plaxiphora and in the genus *Cryptoplax* itself. We may conclude then that the possession of tufts is not of very great importance, at all events when they are feebly developed, and especially when they have a tendency to disappear. It must not be forgotten that there are amongst the Ischnoidea forms with and without girdle pores; in *Angasia* there are stated to be sutural hair-tufts. It may be that, with the exception of the Leptoidea, the pore-bearing forms represent the lower members of their series.

The microscopical structure of the spines of the girdle of *Cryptoplax* (*Cryptoplax larvæformis* and *Cryptoplax striatus*) is identical with that of *Acanthochiton* (*Acanthochiton discrepans*, Brown, and *Acanthochiton garnoti*, Blainv.), and differs from that of all the other species of Chitons which I have as yet examined. These spines may fairly rank as the most specialised in the whole group.

The great thickness of the girdle itself in *Cryptoplax* certainly recalls the thick spiniferous body wall of the shell-less Isopleura, and the comparatively narrow foot lying within the pallial groove bears but slight resemblance to the incipient foot of *Chætoderma* or *Proneomenia*.

The gills present us with some points of interest. In *Proneomenia* amongst the shell-less forms gills are entirely absent, respiration, according to Hubrecht, probably taking place all along the wall of the intestine and the foot, and perhaps more especially in the

[1] *Quart. Journ. Mic. Sci.*, 1882, p. 214. [2] *Proc. U.S. Nat. Mus.*, 1878, p. 314.

rectum. Respiration is effected in *Neomenia* by about thirty ciliated folds in the rectum, in *Chætoderma* the gills are paired, the anal opening lying between them. The few gills situated on each side of the anus in the Leptoidea is but a slight advance, and from this condition there is a complete series to the long row of closely-set gills of the most specialised Chitons, other details of structure tending to prove that the extent of the gill-row is one indication of specialisation. In *Cryptoplax* the gills extend to about one-third to one-half of the length of the foot, and thus constitute a distinct advance upon Leptochiton.

On the whole, then, it would appear that the genus *Cryptoplax* is a highly specialised branch of a low group of Chitons, but there are not yet sufficient data to indicate the exact relationship of the genus. The limited Australasian distribution of the genus, so far as that is of any value, supports this conclusion. Carpenter, Dall, and Rochebrune deny that any fossil representatives of the genus are known.

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PLATE I.

PLATE I.

Figure 1.—*Leptochiton benthus*, n. sp.

„ 2.—*Leptochiton belknapi*, Dall.

„ 3.—*Leptochiton kerguelensis*, n. sp.

„ 4.—*Hemiarthrum setulosum*, Carp.

„ 5.—*Lepidopleurus dorsuosus*, n. sp.

„ 6.—*Lepidopleurus dallii*, n. sp.

„ 7.—*Chiton murrayi*, n. sp.

„ 8.—*Plaxiphora carpenteri*, n. sp.

„ 9.—*Cryptoplax striatus*, Lam. (Drawn by the Author.)

„ 10.—*Cryptoplax oculatus*, Quoy and Gaim.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.

T. H. Thomas del. F. Huth, Lith. Edin.

1, LEPTOCHITON BENTHUS, n. sp. 2, LEPTOCHITON BELKNAPI, Dall. 3, LEPTOCHITON KERGUELENSIS, n. sp.
4, HEMIARTHRUM SETULOSUM, Carpenter. 5, LEPIDOPLEURUS DORSUOSUS, n. sp. 6, LEPIDOPLEURUS DALLII, n. sp.
7, CHITON MURRAYI, n. sp. 8, PLAXIPHORA CARPENTERI, n. sp. 9, CRYPTOPLAX STRIATUS, Lamarck.
10, CRYPTOPLAX OCULATUS, Quoy & Gaimard.

PLATE II.

PLATE II.

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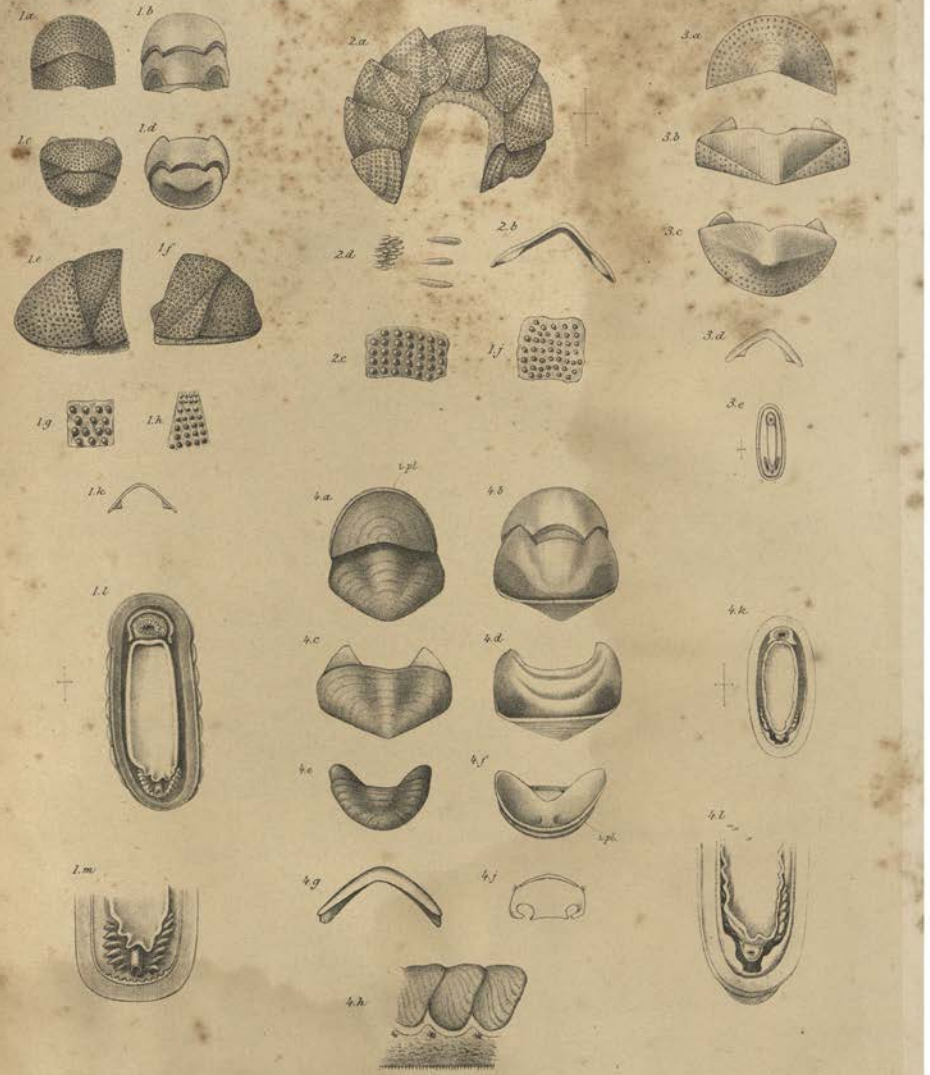

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1a-1m, LEPTOCHITON BENTHUS, n.sp. 2a-2d, LEPTOCHITON BELKNAPI, Dall.
3a-3c, LEPTOCHITON KERGUELENSIS, n.sp. 4a-4l, HEMIARTHRUM SETULOSUM, Carpenter.

PLATE III.

PLATE III.

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5a-5i, LEPIDOPLEURUS DORSUOSUS, n. sp. 6a-6i, LEPIDOPLEURUS DALLII, n. sp. 7a-7e, CHITON MURRAYI, n. sp.
8a-8g, PLAXIPHORA CARPENTERI, n. sp. 9a-9m, CRYPTOPLAX STRIATUS, Lamarck. 10a-10m, CRYPTOPLAX OCULATUS, Quoy & Gaimard.
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